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GENTES HERBARUM

Occasional Papers on the Kinds of Plants

By L. H. BAILEY

....he would come hard against the fact that he deals with two gentes or kinds of species....One gens has recorded origin, with the typical form well recognized and probably represented in a "type specimen" in the herbarium....It is an indigen of known habitat. The other gens is a domesticated group....having therefore no clear taxonomic beginning....a cultigen.—L. H. B., in Science, n. s., xlvii, 306 (1918).

I. A Collection of Plants in China

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A COLLECTION OF PLANTS IN CHINA

On the occasion of a visit to China in the spring and summer of 1917, I undertook to make a collection of herbarium material representing the flora as I found it at several places, not neglecting the cultivated plants. The localities are in central China, measured north to south (in the Yang-tze region and in parts of Hupeh and Honan).

Part of the collection was taken in and about Zaukadoo, practically a part of Shanghai, and also on the grounds of St. John's University adjoining. The grounds of St. John's are extensive, and a good part was planted many years ago as a private estate with stock from various sources, Chinese and foreign. The owner at that time was an English merchant. On parts of the grounds, wild plants are well established. The collected flora at St. John's, therefore, is of a miscellaneous character and wide variety, evidently representing the remainder of many trials. The village of Zaukadoo is a small thickly peopled center, with open cultivated fields about it. In this region is a municipal park of the city of Shanghai. The latitude is about 31 degrees.

Other collections were made at Kuling and vicinity in the Province of Kiangsi, three or more days' journey up the Yang-tze river. Kuling is itself a foreign summer resort on the Lu-shan mountains, at an elevation of 2500 to 3500 feet, in latitude about 32 degrees. In this territory collections had been made by E. H. Wilson, and many new and interesting things have been described from his material. (See the volumes of Sargent, Plantae Wilsonianae).

A few specimens were taken at Hankow, and at Wuchang opposite, on the Yang-tze, Province Hupeh, about four days' journey above Shanghai. These were largely cultivated plants and spontaneous introduced or adventitious species.

Considerable collections were made at Chi-kung-shan (romanized also Ki-kung-shan), a mountain missionary and summer resort, and in the wild country round about. This place is on the border of the Provinces of Hupeh and Honan, in the region representing the divide between the drainage of the Yang-tze and Hwai-ho rivers. The altitude of my collecting lay approximately between 1500 and 2500 feet; latitude about 32 degrees. This region had not been previously collected. I was there in June, at a time when the spring flora had passed. The area is entered from Sin-tien, the southernmost station in Honan. Collections were made along the boundary of the provinces, mostly on the Honan side.

Thence I went north to Kioshan, Province Honan, latitude about 33 degrees. Here the flora is scant, the country being devoted to farming. An excursion was also made to Loh-shan mountains, about 60 Chinese miles

(or li) back of Kioshan, to the temple Huen-t'ai-kung (temple of the "Sombre Terrace") near the base of the mountains, and to temple Tsu-shi-miao at the top said to be at an elevation of about 3000 feet. So far as I am aware, no collection of herbarium material had been brought out of Honan.* (Of course the reader will not confuse this name with Hunan, a Province south of the Yang-tze, nor with Yunnan in southwestern China from which so much remarkable zoological and botanical material has been brought). I was in Honan in July, and therefore missed the early and the late floras.

Other places were visited briefly, and they are mentioned in the list when specimens were obtained, as Kiukiang on the Yang-tze river in Province Kiangsi.

Plants in gardens and private grounds, of both native persons and foreigners, were collected as far as possible. Some of these plants are the common flower-garden subjects and shrubs of European and American catalogues; others are Chinese or at least oriental plants transferred to cultivation. I have separated certain cultivated types as botanical varieties, and probably other group-forms should have similar treatment. The many forms of oriental Brassica I do not yet understand, and I reserve the group, together with other domesticated Brassicas, for a subsequent paper.

A word should be said as to what is involved when a species is "planted" or cultivated by the Chinese. Often the plant is merely transferred from the wild, and is not the subject of commercial propagation as with us. In parks and private grounds plants unknown to science have been found, having been brought down in times past from the interior or passed from place to place without record. Many of the early horticultural introductions, as the Chinese primrose, were secured by travelers at the treaty ports, having been brought to these ports by natives in previous time by the slow movement from the interior of the country. It does not follow because a tree or shrub is found in planted or cultivated grounds that it is exotic or even foreign to the locality. Thus, the former of the two willows described in this paper was first taken as a planted tree, and later found in truly wild and natural conditions in the same region. It will be seen, therefore, that it is not practicable, even were it desirable, to attempt to separate the cultivated and introduced things from the native flora by using different kinds of type.

The material I secured at these various places was not extensive, nor is it important as compared with the large and remarkable findings in central and western China by several well-trained collectors. The places are not "rich" in botanical material, in the sense of the Yunnan-Szechuan and other regions recently visited by explorers.

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*In 1919, a collection was made in Honan by Joseph Hers, and sent to the Arnold Arboretum.

I collected alone, in time taken mostly from other travel, and did not have opportunity to make regular duplicates. The work was cut short because plans were changed on account of the War. I had no time to make ecological or geographical observations; nor is this possible until the species are identified, and the identification cannot be completed in China. I trust, however, that this limited list, along with others, may be of service to those who some day may make studies of these floras. Only approximately 2000 collections were made, representing about 900 species and botanical varieties, in less than 500 genera. I did not go with the purpose to find novelties, but to have the satisfaction of an excursion in a country botanically little understood and particularly with the hope of seeing plants formerly known to me only in cultivation growing wild and in something like their original state. West-central Honan, lying in the hills and mountains at the west of one of the great agricultural plains of China, should yield original forms of a number of cultivated plants. From this point of view, the excursion was attractive. Following is a running list of plants growing in the wild and as if native, which I had heretofore long known but only as cultivated subjects or escapes from cultivation; many of them I found in the uplands of the Hupeh-Honan country:

Cyrtomium falcatum
Lygodium japonicum
Hemerocallis flava
" fulva
Hosta caerulea (Funkia)
Lilium Brownii
" tigrinum
Humulus japonicus
Boehmeria nivea
Polygonum orientale
Celosia argentea (supposed to be the original of the cockscomb)
Dianthus chinensis
" superbus
Anemone japonica
Paeonia obovata
Magnolia denudata
Macleaya (Bocconia) cordata
Sanguisorba officinalis
Astilbe chinensis
Deutzia scabra
Hydrangea paniculata
Saxifraga sarmentosa
Exochorda racemosa (E. grandiflora)
Prunus armeniaca
" glandulosa
" Mume
" Persica
" salicina (P. triflora)
" tomentosa
Pyrus serotina (P. sinensis, Hort.)
Rosa cathayensis (R. multiflora of China)
" laevigata
Spiraea japonica (S. callosa)
" trilobata
Pueraria hirsuta (P. Thunbergiana)
Poncirus (Citrus) trifoliata

Ailanthus altissima (A. glandulosa)
Ilex cornuta
Evonymus radicans (a variety)
Acer Ginnala
" palmatum (A. polymorphum)
Hovenia dulcis
Zizyphus sativa
Ampelopsis brevipedunculata (Ampelopsis, or Vitis, heterophylla of cultivation)
Parthenocissus tricuspidata (Ampelopsis Veitchii)
Hypericum chinense
Forsythia suspensa (var.)
Trachelospermum jasminoides (Rhynchospermum)
Caryopteris incana (C. Mastacanthus)
Vitex Negundo
Origanum vulgare
Lycium chinense
Physalis Alkekengi
Campsis chinensis (Tecoma grandiflora)
Catalpa ovata (C. Kaempferi)
Lonicera japonica
Viburnum tomentosum (V. plicatum)
Platycodon grandiflorum
Chrysanthemum, in the form of C. indicum

Attention was given to the vegetable products offered for sale. I had the use of a bit of land near Shanghai, on which I planted such living roots as I found in the market, and carried the plants to maturity, to secure herbarium material. I have also grown many of the food plants in my garden at Ithaca, particularly the Brassicas, and others are yet to be grown. The cultivated flora of China offers an interesting and profitable field, to which I still hope to give consideration. I began this study many years ago, and published some of the results in Bull. 67, Cornell Exper. Sta. (1894) as "Some Recent Chinese Vegetables," proposing two new species.

The tree vegetation is not extensive, either in numbers of plants left standing or in species, in the regions I visited; nor is the planted tree flora of much variety. In the interior walled city of Kioshan I noted only the following trees or tree-like plants:

Ailanthus altissima
Melia Azederach
Paulownia tomentosa
Morus alba
Broussonetia papyrifera
Punica Granatum
Poncirus trifoliata
Firmiana simplex
Sophora japonica
Aleurites, probably A. Fordii
Prunus armeniaca
Bamboo, sparingly

The specimens of the entire collection are in my personal herbarium, with a few special duplicates elsewhere. In the study of them I have availed myself of the kindness of the many specialists whose names appear in the lists. I have also been extended the courtesies of the Gray Herbarium and the Arnold Arboretum Herbarium, Harvard University; Herbarium of the Royal Botanic Gardens, Kew, England, and of the Royal Botanic Gardens, Edinburgh; National Herbarium, Washington; Herbarium of the New York Botanical Garden, Bronx, New York City. To the directors and staffs of these institutions I am under great obligations. I should also specially mention the help I have had from Alfred Rehder and

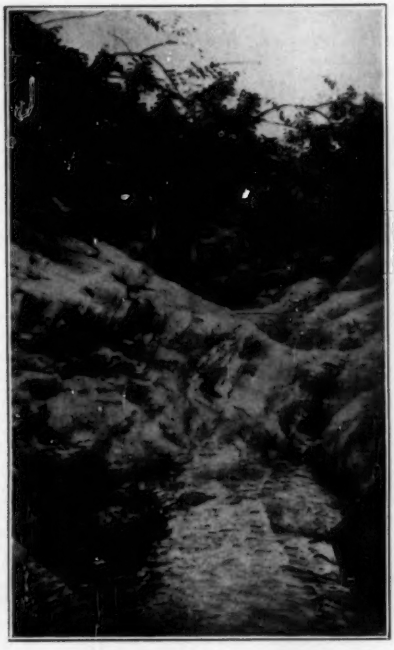

FIG. 1. THE HUPEH-HONAN COUNTRY.—UPPER, WILD PEACH BUSH IN THE CENTER. (See page 29.) LOWER, THE DAY'S COLLECTING.

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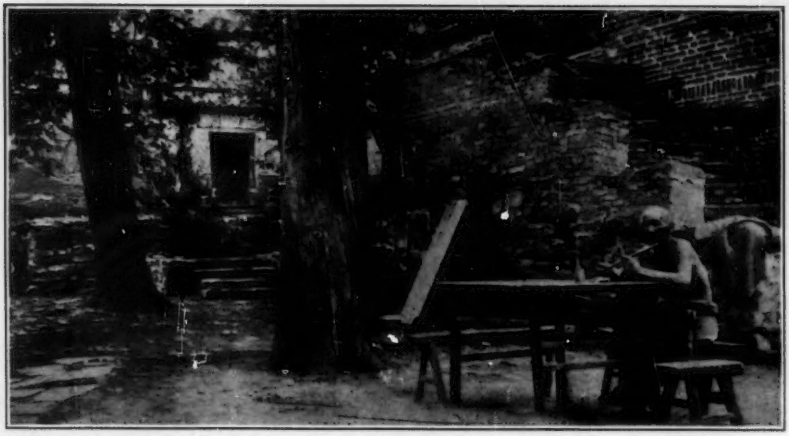


FIG. 2. INTERESTING TREES.—UPPER, JUNIPERUS CHINENSIS AT TEMPLE HÜEN-T'AI-KUNG. LEFT, GINKGO, NEAR A VILLAGE IN HONAN. RIGHT, FORTUNE'S PALM, TRACHYCARPUS EXCELSUS VAR. FORTUNEI.

Camillo Schneider, of the Arnold Arboretum, who have given much study to the woody plants of China. Mr. Rehder has determined a wide range of the material in the many groups to which he has given attention in the past years, and has aided me in various ways in my work and in the preparation of this paper. One of the pleasantest and most significant parts of a little excrusion of this kind is the cheerful and willing cooperation of fellow workers, and the throwing open of priceless collections, when the determinations are finally to be made.

In many of the groups it is impossible yet to make critical determinations, for the material in herbaria is scant and the relationships may not have been given thorough study. It is only when abundant material accumulates, covering considerable ranges, that the limitations of species in China can be satisfactorily understood.

The descriptions of new species resulting from this collection are 20, in the following genera:

Carex, 2
Salix, 2
Ficus
Pilea
Sedum, 3
Rubus
Lespedeza, 2
Maackia
Vicia, 2
Lysimachia, 2
Salvia
Stachys
Atractylis

The new varieties and forms are 15, in

Salix
Quercus
Amaranthus
Raphanus, 3
Philadelphus
Rosa
Rubus, 2
Ampelopsis
Vitis
Justicia
Abelia
Chrysanthemum

The number of transfers from variety to species or vice-versa, and of new combinations that appear not to have been made by others, is 9, in

Smilax, 2
Roripa
Rosa
Rubus
Ampelopsis
Satureia
Cacalia
Lactuca

The total systematic novelties and taxonomic changes, therefore, are 44.

EXPLANATION

The plants were growing wild or under spontaneous conditions except when otherwise noted.

Cult.: Cultivated, rather than adventive, wild, or native.

Ts'ai: Green- or leaf-vegetable, following the rendering in the Mandarin system of Wade. This word is written tsai, tshia, tshai, and otherwise.

Sh.: Shanghai (mostly the suburb of Zaukadoo and St. John's University), Province Kiangsu.

Klg.: Kuling, Province Kiangsi.

Chk.: Chi-kung-shan, Provinces Hupeh and Honan.

Ksh.: Kioshan and vicinity, Province Honan.

(2), (3), etc.: the number of different collections of the plant.

† is placed opposite the new species, varieties and new names, to aid the bibliographer.

n. sp. (sp. nov.): new species (*species nova*), used in this paper only for a species described for the first time under any authentic botanical name.

n. var. (var. nov.): new variety (*varietas nova*), for a variety for the first time described under any name.

n. f. (form. nov.): new form (*forma nova*), for a form described originally or for the first time.

n. tr. (trans. nov,): new transfer, for the cases in which n. comb. is customarily used (see explanation below).

n. st. (st. nov.): new status (*status novus*), employed in this paper to denote the transfer of a plant to another status or standing, as from a variety to a species, from a species to a variety, from one accepted genus to another, and the like. For these transfers, the form n. comb. (new combination, *combinatio nova*) is commonly used, although not always accurately. Often n. sp. and n. var. are employed, but I think without proper justification; I would use these formulae only for species and varieties described *de novo*, when they are first introduced to science.

It will be seen that all these cases fall into two groups: (1) The virgin cases in which a botanical name of any kind is first bestowed, the plant being new to science; here we should use n. sp., n. ssp. (*subspecies nova*). n. var., n. f. (2) The cases in which a transfer of names occurs.

In this second category (transfers) there are again two groups of cases:

(a) Those in which there is merely a shifting or transposition of names without in any way affecting the rank or standing of the plant; they are cases of straight synonomy; e. g. *Rumex Daiwoo*, Makino, shifted from *Lapathum Daiwoo*, Sieb., because the genus Lapathum is not maintained. Makino writes it "nom. nov.", but this is a case in which n. comb. may be rightly used, if employed at all. Personally I no longer use n. comb., because it is uncouth but chiefly because it assumes that we are concerned only with a question of mere names whereas we often deal, in such cases, with generic definitions and other biological factors. I prefer a formula that indicates only the fact of transfer (as n. tr., trans. nov., new transfer, *translatio nova*). I use n. nom. or nom. nov. (new name, *nomen novum*) only when it is necessary to invent or employ a new word because the existing word is preoccupied: thus, I should use n. nom. for *Scleria Ridleyi*, C. B. Clarke (*S. laevis*, Hance, not Retz); *Polygala congesta*, Rehder & Wils., n. nom. (*P. floribunda*, Dunn, not Benth. nor Boiss. & Huet).

(b) Those cases in which the grade or rank of the plant is involved, when n. st. should be employed. Thus, I should say *Elaeagnus magna*, Rehder, n. st. (*E. umbellata* ssp. *magna*, Serv.); *Pinus sinensis* var. *densata*, Shaw, n. st. (*P. densata*, Masters). I use n. st. when a plant is "raised" or "lowered" in standing, and also when its status (name) is changed because of expansion or contraction of the limits of genera.

THE COLLECTION

BRYOPHYTA

(Determined by Mrs. N. L. Britton, New York Botanical Garden)

Haplocladium
H. microphyllum, Broth. Sh.(2)
Mnium
M. cuspidatum, Leyss. Sh.
Both these mosses were growing on the grounds of St. John's University.

PTERIDOPHYTA

(Determined by Wm. R. Maxon, U. S. National Herbarium)

Asplenium
A. incisum, Thunb. Chk.(4). Klg. Frequent.
A. Trichomanes, L. Chk.
A. ——— Klg.
Athyrium
A. nigripes, Moore. Klg.
A. nigripes, Moore? Chk. Sterile plant.
A. nipponicum, Hance. Chk.(4). Frequent.
Cheilanthes
C. argentea, Kunze. Ksh.
Coniogramme
C. japonica, Diels. Sh. Chk.
Cyclophorus
C. Drakeanus, C. Chr. Klg., on cliffs.
C. petiolosus, C. Chr. Chk. Ksh., on stone walls; 3000 ft.
Cyrtomium
C. falcatum, Presl. Chk.(2).
Dryopteris
D. crenata, Kuntze, sens. lat. Ksh., in chinks on city wall.
D. decursive-pinnata, Kuntze. Chk.(3).
D. lacera, Kuntze. Chk.
D. laxa, C. Chr.? Klg.(2).
D. setigera, Kuntze. Chk.(3).
D. sophoroides, Kuntze. Sh.
D. varia, Kuntze. Chk.
D. ——— Chk.
Microlepia
M. pilosella, Moore. Klg.
Polypodium
P. lineare, Thunb. sens. lat. Klg.
Pteridium
P. aquilinum, Kuhn. Klg. Ck.
Pteris
P. multifida, Poir. Sh., growing in a wall.
Sphenomeris
S. chinensis, Maxon (Odontosoria). Chk.

SCHIZAEACEAE

Lygodium
L. japonicum, Swz. Klg. Chk.(2). Ksh.(2). Frequent.

GLEICHENIACEAE

Gleichenia
G. linearis, Clarke. Klg.

OSMUNDACEAE

Osmunda
O. lancea, Thunb. Klg. Chk.(2).

MARSILEACEAE

Marsilea
M. coromandeliana, Willd. Ksh., in small pond.

SALVINIACEAE

Azolla
A. pinnata, R. Br. Kiukiang, Prov. Kiangsi.
Salvinia
S. natans, Hoffm. Kiukiang, Prov. Kiangsi.

SELAGINELLACEAE

Selaginella
S. helvetica, Link. Common on grounds of St. John's University.
S. involvens, Spring. Chk.
S. mongholica, Rupr. Ksh.
S. tenera, Spring.? Klg.

SPERMATOPHYTA

CYCADACEAE

Cycas
C. revoluta, Thunb. Sh. (2), planted in the open; one form with very dark green leaves, and one with light green; no fruit.

GINKGOACEAE

Ginkgo
G. biloba, L. Sh. Chk. Ksh., very large tree on temple grounds. I have never seen this tree in such situations as to make it appear indigenous or wild.

TAXACEAE

Cephalotaxus
C. Fortuni, Hook. Klg., Chk., both in the wild.
Podocarpus
P. macrophylla, Don, var, Maki, Sieb. Sh.(2), planted.

PINACEAE

Chamaecyparis
C. pisifera, Sieb. & Zucc. Sh.(2), planted. Fruiting spray drooping.
Cryptomeria
C. japonica, D. Don. Sh.(2). Klg., very large old trees. Planted.
Cunninghamia
C. lanceolata, Hook. (*C. sinensis*, R. Br.). Sh., planted. Klg., as if native. Chk., planted.
Juniperus
J. chinensis, L. Sh. (5), planted. Ksh., planted, said to have been transferred from the wild. Ksh., very large tree in grounds of Huen-t'ai-kung temple. Peking, planted.
J. squamata, Lamb. Chk.(2), planted, said to have been taken from the wild.
Pinus (determined by George R. Shaw.)
P. Massoniana, Lamb. Chk.(2).
P. sinensis, Lamb. Sh., planted.
Pseudolarix
P. amabilis, Rehd. (*P. Kaempferi*, Gord.) Klg.; tall straight tree 60 ft. or more.
Thuja
T. orientalis, L. Sh.(5), planted. Ksh., in the hills as if native.

ALISMACEAE

Sagittaria
S. sagittifolia, L. Sh. Tubers sold as food, under the name "Zu-koo"; grown in my garden in China. I assume this is *S. sagittifolia*, forma *sinensis*, Makino.

HYDROCHARITACEAE

Hydrilla
H. verticillata, Presl. Kiukiang, Prov. Kiangsi, in small still pond.
Hydrocharis
H. Morsus-ranae, L. Wuchang, in lotus (nelumbo) pond.

GRAMINEAE

(Determined by F. Tracy Hubbard, Brookline, Mass., with the cooperation in some cases of A. S. Hitchcock, except the bamboos (Arundinaria. Phyllostachys. Sasa), which are by A. B. Rendle, British Museum.)

Agropyron
A. caninum, Beauv. Sh.(4), common. Klg.
A. ciliare, Franch. Chk., growing singly (not in clumps).
A. semicostatum, Nees. Wuchang, a weed. Chk.(3).

Agrostis
A. alba, L. Klg.(2). Chk. Apparently introduced.
A. alba var. vulgaris, Thurb. Sh., in lawn.
A. hyemalis, B.S.P. Chk.(2), apparently introduced.

Aira
A. capillaris, Host. Sh., grown in pots by Chinese gardener, for ornament.

Alopecurus
A. aristulatus, Michx. Sh.(2). Chk., in paddy field.
A. japonicus, Steud. Sh., in open field.

Andropogon
A. annulatus, Frosk. Sin-tien, at foot of mountain near Chk. Ksh.

Arundinaria
A. nitida, Mitf. Klg.
A. ———? Klg., on the hills.

Arundinella
A. anomala, Steud. Klg. Chk.

Avena
A. fatua, L. Sh.(2), apparently introduced.

Beckmannia
B. erucaeformis, Host. Sh., on river shore.

Briza
B. maxima, L. Sh., grown in pots by Chinese gardener for ornament.
B. minor, L. Sh., grown in pots; also (2) spontaneous in fields.

Bromus
B. arvensis, L. Chk., common, apparently introduced.
B. asper, Murr. Klg. Weed in Hankow. Probably introduced.
B. hordaceus, L. Chk., apparently introduced.

Calamagrostis
C. epigeios, Roth. Klg. Chk.(2).

Cynodon
C. Dactylon, Pers. Sh., in lawn. Wuchang, in yard. Ksh., widespread in the region about habitations.

Dactylis
D. glomerata, L. Klg., introduced.

Digitaria
D. ciliaris, Koel. Weed, Wuchang.

Echinochloa
E. colona, Link. Sh.
E. Crusgalli, Beauv. Wuchang (2), weed; one with very long awns, growing in margin of lotus pond.
E. Crusgalli var. mutica, Rydb. Sh.

Eleusine
E. indica, Gaertn. Wuchang, weed.

Eragrostis
E. cilianensis, Link (E. megastachya, Link). Wuchang, weed.
E. pilosa, Beauv. Chk., in rice paddy.

Festuca
F. ovina, L. Chk., in lawn.
F. parvigluma, Steud.? Ksh.

Ginannia (Holcus).
G. lanata, Hubb. Klg.(2), apparently introduced.

Glyceria
G. aquatica, Wahl. Klg.

Hordeum
H. vulgare, L. Sh.(2), cult. by Chinese, and also escaped.
H. vulgare var. trifurcatum, Koern. & Wern. Sh., adventive.

Imperata
I. arundinacea, Cyrill, var. Koenigii, Hack. Sh., common. Chk.
Isachne
I. australis, R.Br. Sh., open field. Chk.
Koeleria
K. cristata, Pers. Chk. Ksh., in the hills.
Lagurus
L. ovatus, L. Sh.; grown in pots for ornament by Chinese gardener.
Lolium
L. perenne, L. Sh., in lawn.
Melica
M. scabrosa, Trin. Chk. Ksh., in the hills.
Miscanthus
M. sinensis, Anderss. Sh., along canals; 8–10 ft. tall. Kiukiang(2), Prov. Kiangsi, common.
Oplismenus
O. undulatifolius, Beauv. Klg.
Paspalum
P. ———, included by Rendle in P. scrobiculatum, L. Klg.(2).
Phaenosperma
P. globosa, Munro. Klg.(2).
Phleum
P. japonicum, Franch & Sav. Sh. Chk. (2).
P. pratense, L. Klg., apparently introduced.
Phyllostachys
P. nidularia, Munro. Klg.(3), on hard hills.
P. puberula, Munro. Sh., planted; stems shining, nearly black.
P. Stauntoni, Munro. Chk.(2), planted; 20 ft.
P. aff. P. Stauntoni. Sh.(3), planted, 10–40 ft.; Chk., planted 12 ft.; Chk.(2), in the wild, one of them very dwarf.
P. ———. Klg.
Poa
P. acroleuca, Steud. Sh.(5). frequent. Klg.
P. annua, L. Sh.(4), common. Klg. Chk.
P. attenuata, Trin. Chk.(3).
P. nemoralis, L., viviparous form. Chk.
P. sphondylodes, Trin. Chk.(2).
Polypogon
P. littoralis, Smith. Sh.(2).
Rottboellia
R. latifolia, Steud, Sh., along river.
Sasa
S. Veitchii, Rehd. (*S. albomarginata*, Makino.) Sh., established on the grounds of St. John's University; 4 ft.
Setaria
S. italica, Beauv. subsp. stramineofructa, Hubb., subvar. germanica, Hubb. Ksh.
S. macrochaeta, Spreng. Wuchang, weed.
S. viridis, Beauv. Sh.(2). Chk.
Spodiopogon
S. sibiricus, Trin. Klg.
Themeda
T. imberbis, Th. Cooke. Chk.
Tripogon
T. chinensis, Hack., var. genuinus, Hack. Chk., in mats on rocks.
Trisetum
T. flavescens, Beauv. Sh., as if introduced.
Triticum
T. aestivum, L. Sh., cult. by Chinese.
Zizania
Z. latifolia, Turcz. Sh., along river.
Zoysia
Z. japonica, Steud. Sh., in lawn.

CYPERACEAE

Carex

C. breviculmis. R. Br. Sh. (6)., common. Chk.

† C. chikungana, sp. nov. (Euvignea Longirostres, C. B. Clarke). Affinis videtur *C. sadoensi*, Franch., sed habitu minore, spicis magis aggregatis, perigyniis ad latitudinem comparatis multo longioribus et sensim (vix abrupte) in rostrum attenuatis differt.

Planta parva, tenuis, erecta, 2–3 dm. alta: culmus folia circiter aequans, laevis, nec acute triqueter, striatus: folia 1–3 mm. lata, margine scabrida, longe acuminata: spicula mascula solitaria, manifeste terminalis, 2 cm. longa, pedunculata, spiculas tres femineas sessiles aggregatas vel approximatas superans; bracteae non vaginatae, spiculam masculam non superantes; perigynia erecta, ovalia et abrupte in rostrum gracile bidentatum attenuatum, 3–3.5 mm. longa, stylis longis conspicuis; squama aristata vel cuspidata, perigynium fere aequans vel interdum superans; achaenium ovale, compressum.

Chi-kung-shan, June 13, the perigynia falling, in dry soil. In habit it bears some resemblance to plants of the *C. communis* group, although not taxonomically related. The long narrow perigynia are characteristic.

C. dispalata, Boott. Chk.(2).

C. gibba, Wahl. Sh. Chk.

C. japonica, Thunb. Klg.

† C. kulingana, sp. nov. (Eucarex Mediocri-rostratae, asiaticae, C. B. Clarke). Facies *C. tumidae*, Boott, sed squamis brevibus et tantum acutis vel muticis (non aristatis et setosis) spicula mascula minore et spiculis femineis multo superata, perigyniis rectis graciliter rostratis leviter bidentatis differt.

Planta tenuissima, 6–8 dm. alta; culmus acute triqueter, laevis, glaber: folia longa et angusta, 4–6 mm. lata, ad marginem et ad costam subtus leviter scabrida, vaginis 1–3 cm. longis: spicula mascula solitaria, parva, tenuis, 2–3 cm. longa, sessilis vel fere sessilis; spiculae femineae in apice culmi 2–4 aggregatae et masculam superantes, plerumque una remota, omnes sessiles vel breviter pedunculatae, erectae vel fere erectae, 4–6 cm. longae, satis laxiflorae; perigynia divaricata, non inflata, 3-angulata, manifeste multinervia, in rostrum gracile breviter bidentatum vel fere integrum attenuata, 3 mm. longa; squama hyalina, brevissima, mutica vel subacuta; achaenium breve, paullo longius quam latum, triquetrum.

Kuling, July 18, the perigynia beginning to fall. It bears some superficial resemblance to *C. Brownii*, Tuckm., but the spikes are more slender, and the scales small and nearly obtuse. The very short merely acute or muticous (rather than awned and setose) scales distinguish it from *C. tumida*, Boott, as well as the small and relatively inconspicuous staminate spike and the straight slender-beaked perigynia.

C. lanceolata, Boott. Chk.

C. ligulata, Nees. Chk., in woods.

C. mollicula, Boott. Klg. (2).

C. Pierotii, Miq. Sh.(3).

C. pruinosa, Boott. Chk.(3).

C. punctata, Gaud. Sh., in grassy field, as if introduced, leaves broader than usual.

C. stenophylla, Wahl. Ksh., on dry hard bank.

C. n. sp.? aff. C. Fauriei, Franch. Chk.

Cyperus (determined by N. L. Britton, New York Botanical Garden).

C. compressus, L. Sh.(2), weed.

C. Iria, L. Sh., weed.

C. rotundus, L. Sh., weed; immature specimens from Wuchang probably the same.

Eleocharis

E. capitata, R. Br. Ksh. (determined by N. L. Britton).

E. dulcis, Trin. (*Andropogon dulce*, Burm. *Hippuris indica*, Lour. Fl. Cochin. 16. *Eleocharis tuberosa*, Schult.). The "water chestnut," much sold for food in the markets of China, is the tuber of this plant. I did not get herbarium specimens except those grown from tubers by myself at Shanghai and Ithaca; the plants did not bloom, but I assume them to be *E. tuberosa* of Schultes, with which they well compare.

Fimbristylis (by N. L. Britton).

F. ferruginea, Vahl? Ksh.; no ripe fruit.

Kyllinga (by N. L. Britton).

K. monocephala, Rottb., slender race. Kiukiang, Prov. Kiangsi.

PALMACEAE

Trachycarpus

T. excelsus, Wendl., var. Fortunei, Makino (*T. Fortunei*, Hook.). Sh.(5), planted, both staminate and pistillate, one specimen from tree 12 ft. high and leaves 3 ft. across. Not having studied the Japanese plant, *T. excelsus*, I am not prepared to define the one planted at Shanghai, but I am following Makino (Obs. Fl. Jap. Fasc. iv, p. 7, from Bot. Mag. Tokyo, 1904) in separating the Chinese plant as a variety whereas most recent authors combine the two. The var. *Fortunei*, which is *T. Fortunei* of Hooker, is supposed to differ from the original type, *T. excelsus* (*Chamaerops excelsa*, Thunb.) in being more robust, petiole shorter and stouter, leaves shining and less glaucous and divided much beyond the middle, the segments much broader and the tips pendulous. The tree in Fig. 2 shows the drooping leaf-segments.

ARACEAE

Acorus

A. gramineus, Ait. Chk., along brook by rocks.

Arisaema

A. consanguineum, Schott. Klg.(3). A large specimen in ripe fruit is a striking plant.

Colocasia

C. esculenta, Schott. Sh. Kiukiang, Prov. Kiangsi. Cult by Chinese for the tubers. I did not see flowers, but assume that the plant is *C. esculenta* rather than *C. antiquorum* (See Young, Stand. Cyclo. Hort. vi: 3311).

Pinellia

P. pedatisecta, Schott. Ksh.(2), in the hills.
P. ternata, Breitenb. (*P. tuberifera*, Ten.). Chk. Ksh.(2), in the hill country.

LEMNACEAE

(Determined by J. B. Norton, U. S. Dept. of Agriculture).

Lemna

L. minor, L. Sh. Chk.
L. paucicostata, Hegelm. Sh. Ksh.

Spirodela

S. polyrhiza, Schleid. Kiukiang, Prov. Kiangsi. Wuchang. Ksh.

Wolffia

W. arrhiza, Wimm. Wuchang.

COMMELINACEAE

Commelina

C. communis, L. Klg. Wuchang. Chk. In different leaf-forms.

JUNCACEAE

Juncus

J. alatus, Franch & Sav. Chk. (2).
J. effusus, L., var. decipiens, Buchen. Chk.(2). making tough clumps.
J. pauciflorus, R. Br. Kiukiang, Prov. Kiangsi. Chk.(2).
J. prismatocarpus, R. Br. Klg.

LILIACEAE

(The wild Alliums, Asparagus, Compsoa, Heterosmilax, Liriope, Smilax, Veratrum, and certain others determined by J. B. Norton.)

Aletris

A. spicata, Franch. (*A. japonica*, Lamb.). Klg. Chk.

Allium

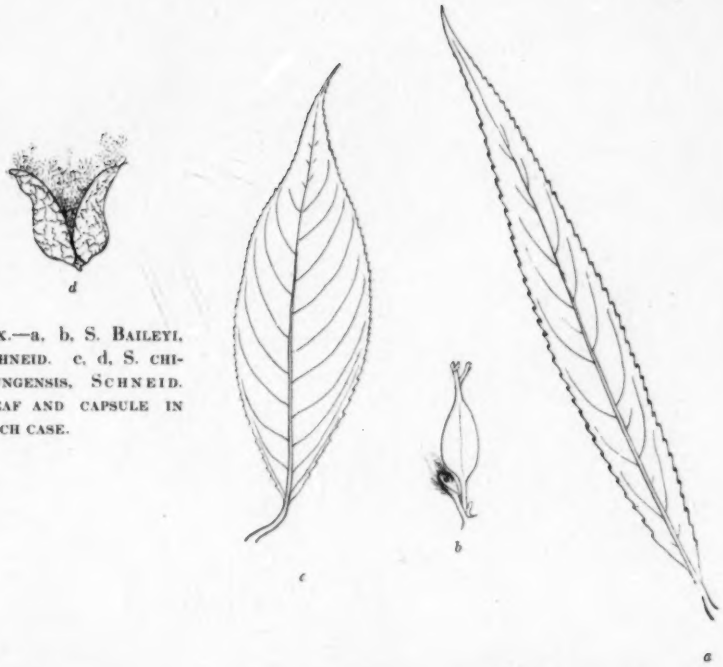
A. sativum, L. Sh., in the market, as Dah-seu, and grown in my garden at Shanghai.
A. senescens, L.? Ksh., in the hills, a flat-leaved plant without flowers.
A. Thunbergii, G. Don. Sh. Chk.
A. ——. Other forms of Allium are cultivated, but I cannot yet identify them botanically. I have grown the "Japanese leek," from Japanese seed; it is probably *A. fistulosum*, L. See Makino, Obs. Fl. Jap., Fasc. x, 57 (from Bot. Mag. Tokyo, 1910) for the Giant Japanese Leek, *A. fiistulosum* var. *giganteum*, Mak.

Asparagus

A. lucidus, Lindl. Chk. Ksh., in the hills.

Compsoa (Tricyrtis)

C. macropoda, Kuntze. Klg.



SALIX.—a, b, S. BAILEYI, SCHNEID. c, d, S. CHIKUNGENSIS, SCHNEID. LEAF AND CAPSULE IN EACH CASE.

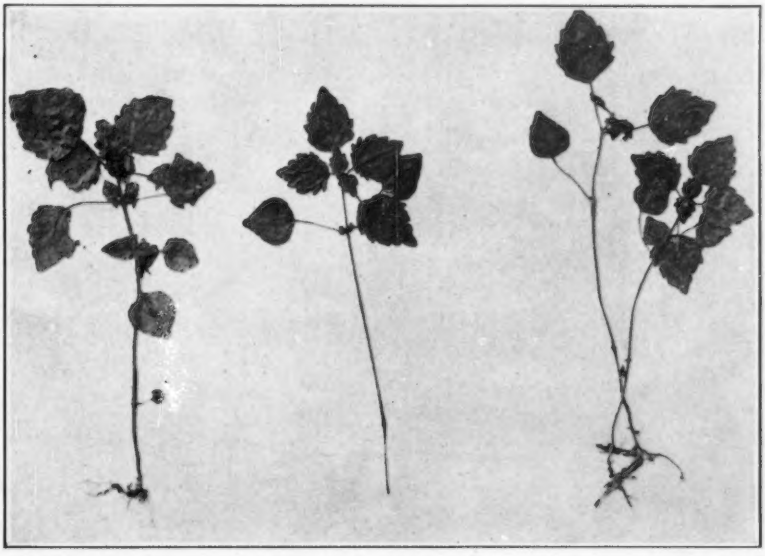


FIG. 3. SALIX AND PILEA.—PILEA HENRYANA, WRIGHT.

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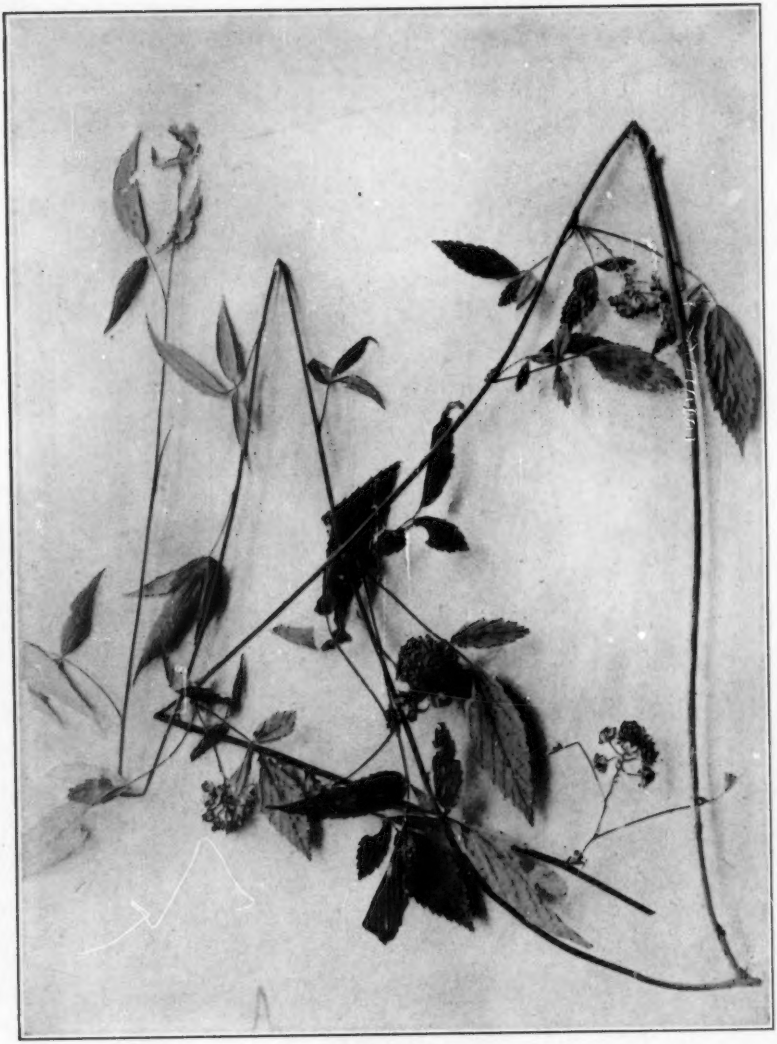

FIG. 6. RUBUS KULINGANUS

FIG. 7. LESPEDEZA DISTINCTA.

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FIG. 8. LESPEDEZA STOTTSAE

Hemerocallis

H. flava, L. Ksh

H. fulva, L. Klg.(2). Chk.(2).

Both species apparently truly wild and native.

Heterosmilax

H. Gaudichaudiana, Maxim. Chk. A very strong vine, on bushes.

Hosta (Funkia)

H. caerulea, Tratt. Chk., planted, said to have been transferred from the wild. Apparently the same plant, but with narrower bracts, was collected twice at Klg. in the wild and evidently native.

Lilium

L. Brownii, F. E. Brown. Klg., purchased of Chinese who collect it fresh in the wild. Chk., cult., said to have been transferred directly from the wild; 4 ft. tall, with 1–3 fragrant flowers about 6 in. long. A beautiful lily; body color of flowers creamy white, with brown backs on outside segments. The colored pictures of this species show outside of flower more purple or red than I found it to be.

L. Henryi, Baker. Klg.

L. pulchellum, Fisch. & Mey. Chk.(2), an attractive diminutive lily scattered in grassy places.

L. tigrinum, Ker-Gawl. Klg.(2), purchased of Chinese who collect it on the hillsides; also cult.

Liriope

L. graminifolia, Baker., var. Klg., probably planted, a form with very narrow leaves, long pedicels, and prominent bracts.

Ophiopogon

O. japonicus, Ker-Gawl. Sh., planted.

O. japonicus var. Wallichiana, Maxim. Sh., planted or escaped. Hankow, planted.

O. spicatus, Ker-Gawl. Klg.(2). Chk.

Polygonatum

P. latifolium, Desf., var. commutatum, Baker. Klg. Very large (3. ft. high), with leaves 7–8 in. long and 4–5 in. wide, and 6–12 or more flowers in the umbel. Perhaps the *P. giganteum* of Dietrich, referred by him to N. Amer., but whether identical with the American plant is very doubtful.

P. sibiricum, Red. Chk. My specimens come within the complex of forms referred to this species.

Rohdea

R. japonica, Roth. Sh., cult. A common plant in pots on river junks.

Smilax

S. China, L. Klg.(2), large-fruited form. Chk.

S. glauco-China, Warb. Chk.; probably the same species from Klg., leaves only.

†S. herbacea, L., var. flaccida, Norton, n. st. (*S. flaccida*, Wright, Kew Bull. 1895:118). Chk. 2½ ft.

S. megalantha, Wright? Klg. Seems to be an intermediate form between this species and *S. China*.

†S. oblonga, Norton, n. st. (*S. herbacea* var. *oblonga*, Wright, Journ. Linn. Soc. Bot. xxxvi: 98). Klg.(3). An attractive species with berries in dense globular clusters.

S. (Nemexia)——. Klg. A very large-leaved plant (lvs. 7 in. across either way); probably a new species; no flowers or fruit.

Veratrum

V. album, L. Klg.

Yucca (determined by Wm. Trelease, Univ. of Illinois)

Y. gloriosa, L. Sh., planted; 6 ft., blooming profusely.

AMARYLLIDACEAE

Lycoris

L. squamigera, Maxim. Sh., cult.; Klg.(2), apparently the same.

DIOSCOREACEAE

(Determined by J. B. Norton, U. S. Dept. Agriculture)

Dioscorea

D. acerifolia, Uline. Klg.

D. doryophora, Hance. Chk.(3).

D. japonica, Thunb. Klg.(2), both sexes.

D. quinqueloba, Thunb. Chk.

D. ——. Chk., opposite-leaved, in foliage only.

IRIDACEAE

Iris

I. germanica, L., probably, in fruit. Chk., cult in a missionary's garden and said to be "native" (probably an error) at Hankow.

I. japonica, Thunb. Sh., naturalized on grounds of St. John's University.

ZINGIBERACEAE

Zingiber?

Z. ———. Klg., under trees, apparently native; in foliage only

ORCHIDACEAE

(Determined by Oakes Ames, North Easton, Mass.)

Amitostigma

A. gracilis, Schlechter. Klg. Chk., on cliffs.

Bletilla

S. striata, Reichb. f. (*Bletia hyacinthina*, R. Br.). Chk.

Cymbidium

C yunnanense, Schlechter. Sh., sold on the street for its vanilla fragrance; said to be native farther south.

SAURURACEAE

Houttuynia

H. cordata, Thunb. Sh. Klg. Chk.

Saururus

S. chinensis, Baill. Chk.

SALICACEAE

(Determined by Camillo Schneider, formerly of the Arnold Arboretum)

Populus

P. adenopoda, Maxim. Klg.(2), low round-headed trees, perhaps planted. Hankow, in Park. Chk., small planted tree but presumably native. Ksh., in the hills, apparently native.

P. nigra, L. Sh., broad-headed trees, planted.

P. nigra var. italica, Du Roi. Sh., planted; also Seoul, Korea, planted.

P. Simoni, Carr. Ksh., small planted tree.

P. suaveolens, Fisch. Chk., small open-headed tree, planted: also Seoul, planted.

P. tomentosa, Carr. Tientsin (2), street trees. Sh., planted. Ksh.(4), in the hill country, native, becoming large tree 3 ft. diam. Ksh., small planted tree with leaves very glossy above.

Salix

S. babylonica, L. Sh., planted. Klg., erect handsome planted tree. Ksh., a much planted tall street tree with straight trunk and lower spray more or less drooping. Other material (planted Sh.) probably represents *S. babylonica* derivatives or hybrids.

†S. Baileyi, Schneider, sp. nov. Prob. sect. Hastatae. Frutex vel arbuscula, ut videtur erecta ramis strictis; ramuli hornotini glaberrimi (an novelli parce pilosi?), plus v. minus flavescentes, annotini circ. 4 mm crassi plus minusve fuscescentes, vetustiores ut videtur brunnescentes; gemmae juveniles pilosae, floriferae ut videtur ad 14 mm longae, olivaceo-brunneae, glabrae, anguste ellipticae; folia crasse papyracea, minora basi ramulorum lanceolata vel elliptico-lanceolata, utrinque subobtusa vel apice acuta, 2.5×0.8 ad 6×1.8 (vel 7×2) cm. magna, superiora longiora, lanceolata, media latiora, elliptico-lanceolata vel anguste obovato-lanceolata, ad 11.5×2.5 cm. magna, summis satis anguste lanceolata ad 12.5×1.5 magna, superne intense viridia, tantum juniora (novella ignota) basim versus ad costam elevatam sparse pilosa, dein glaberrima, subtus plus minusve discoloria, paullo glaucescentia et pruinosa, etiam glabra, costa utrinque elevata flavescente, nervis lateralibus utrinque ad 15 angulo circiter 45 deg. a costa abeuntibus paullo prominulis, utrinque (superne fere distinctius) tenuissime reticulata, margine distincte satis distanter glanduloso-serrato-dentata dentibus 3–4 (vel versus basim 1–2) pro 1 cm; petioli brevissimi, vix ultra 6 mm. longi, superne late sulcati, glabri (vel parce pilosuli): amenta ut videtur precocia (tantum 2 feminea fructifera valde deflorata visa), sessilia, cylindrica, ad 3.5×0.7 cm. magna, rachi villosula: flores tantum adulti inter fructus remanentes visi; ovaria ovato-elliptica, vix 2 mm. longa, glabra, pedicello iis paullo breviore saepe pilosulo suffulta, stylo distincto apice bifido iis vix duplo breviore coronata, stigmatibus minimis emarginatis, glandula 1,

ventralis, parva, pedicello subtriplo brevior, ovato-rectangularis, obtusa; bracteae obovatae, rotundatae, bicolores, apice fuscae et sericeae, pedicellum juvenilem paullo superantes, quam pedicellus fructifer subbreviores: fructus ovato-elliptici, glabri, pedicellos saepe glabro excluso ad 4mm. longi.

Chi-kung-shan, June 16, a small planted tree (type) probably native; June 30, a bush wild along remote stream (sterile). Fig. 3.

According to the remnants of the precocious catkins, this willow seems to belong to Section *Hastatae* or *Phylicifoliae*, but it differs widely from all the species of eastern Asia in the shape of its long lanceolate very shortly petioled leaves. Most of the Asiatic species of these two sections are very imperfectly known, and I feel unable to determine exactly the relationship of the new species. The shape of its leaves is not unlike those of *S. Miyabeana*, Seem., but the leaves of this species have longer petioles, usually well developed long stipules, and it belongs to an entirely different section (*Purpureae*).—*C. Schneider.*

†S. chikungensis, Schneider, sp. nov. Prob. sect. Pentandrae. Arbuscula; ramuli novelli dense albo-sericeo-tomentelli, hornotini glabrescentes, annotini biennesque glabri, sordide cinereo-fusci; gemmae ovatae, acutiusculae, flavobrunneae, glabrae, ventre saepe applanatae: folia subchartacea, inferiora ramulorum sterilium anguste elliptica vel minima elliptico-oblanceolata, basi acuta, apice subito brevissime acuminata, 1.5×0.5 ad 4.5×1.5 cm. magna, superiora magis lanceolata, ovato-lanceolata vel elliptico-lanceolata, basi acuta vel subobtusa, apice subsensim et plus minusve attenuata tenuissime acuminata, latiora 6–7×2 cm., angustiora ad 7×1.5 cm. magna, maxima perfecte evoluto nondum visa, superne obscure viridia, novella plus minusve sericeo-villosula, cito costa prominula excepta glabrescentia, dein omnino glabra, subtus initio intensius albo-sericea, dein etiam glabra, valde discoloria, glaucescentia, pruinosa, utrinque nervis lateralibus 7–10 prominulis nervata et etiam plus minusve distincte subelevato-reticulata, margine distincte glanduloso-serrata (dentibus 2–4 pro 5 mm.): petioli satis breves, vix ultra 8 mm. longi, superne subsulcati, initio dense, dein laxe pilosuli, apice paulo infra laminam glandulis 2 satis inconspicuis praediti; stipulae tantum in foliis novellis visa semiovato-lanceolata, longissime acuminata, petiolis subaequilonga, plus minusve denticulata et pilosa: amenta ut videtur coetanea, tantum fructifera adulta visa, cylindrica, ad 3.5 cm. longa et 8 mm. crassa, pedunculis ad 2 cm. longis foliola parva 3–5 normalia ad 4×1 cm. magna gerentibus suffulta, rachi tomentella: flores tantum adulti inter fructis remenantes visi pedicello incluso circiter 3 mm. longi; ovaria ovata, glabra, apice stylo brevissimo stigmatibus brevibus satis emarginatis coronata, basi pedicello brevi, glandulam ventralem haud vel rarius subduplo superante suffulta: bracteae ovato-lanceolatae, acutae, haud deciduae, concolores (ut videtur flavo-virides), tantum basi et ex parte versus apicem margine sericeo-villosae, pedicello duplo vel triplo longiores; glandulae 2, ventralis ut videtur late ovata, obtusa, pedicello subamplectens, dorsalis minor vel minima, sed ut videtur semper distincte evoluta: fructus ovato-elliptici, pedicello brevi incluso circiter 4 mm. longi.

Chi-kung-shan, June 14 (type, pistillate). Fig. 3.

I cannot identify this Salix with any species known to me from eastern Asia. According to the presence of two glands in the female flowers its belongs, apparently, to Sect. *Pentandrae*, and seems to be most closely related to *S. Kusanoi* (Hay.) Schneid; see my ennumeration of the Salix of eastern Asia and the Himalayas in Sargent, Pl. Wils. iii. 93, 1916. *S. Kusanoi* is known only from Formosa, and differs from the new species chiefly in its more or less brownish pubescence and its mostly roundish-ovate bracts. Besides this the stipules of *S. Kusanoi* seem to be smaller and much less pointed, the peduncles are shorter, bearing only a few very small leaflets, the color of the branchlets is distinctly purpurascent; the petioles, however, are not "eglandulosi" as it is stated in the description but possess, more or less distinctly developed, very small traces of glands. We need much more copious material and also male specimens to interpret correctly the new species and its relationship. It also resembles, in some respects, *S. glandulosa*, Seem., especially its very little known var. *Warburgii*, Koidz. from Formosa. But in this species, as well as in *S. Wilsonii*, Seem., which is scracely more than a variety of *S. glandulosa*, the pedicels of the fruits are much longer and the stipules are of a very different shape.—*C. Schneider.*

S. glandulosa, Seem. Sh., tall erect bush or straight tree, frequent about ponds, probably planted or introduced. Klg., planted erect tree, presumably from the wild. Chk.(7), part of it planted and part in the wild. The Klg. and Chk. material is very close to *S. Wilsonii*, Seem., from Central China; perhaps that species is only a form of *S. glandulosa*. Very tall straight trees planted in Sh.(2) are probably to be referred to *S. glandulosa*; specimens in leaf only.

S. Matsudana, Koidz. Ching-lung-chioa, n. w. of Peking, an upright willow much planted.

†S. Matsudana f. pendula, Schneid., form. nov. Sh., a handsome weeping tree on grounds of St. John's University.

S. purpurea, L. Chk., with opposite leaves.

S. ———. Chk., foliage only; bush, almost identical with a branch of a cultivated plant (Wilson's No. 1441) in Herb. Arn. Arb., which represents *S. paraplesia*, Schneid.

S. ———. Chk., foliage only; small tree, agrees well with specimens of *S. jessoensis*, Seem.

MYRICACEAE

Myrica

M. rubra, Sieb. & Zucc.? Sh., a cultivated evergreen shrub, not in bloom.

JUGLANDACEAE

Juglans

J. regia, L. Sh. Ksh., temple grounds. Both planted.

Platycarya

P. strobilacea, Sieb. & Zucc. Chk.(4), a common sumac-like bush or small tree.

Pterocarya

P. stenoptera, C.DC. Sh.(3), planted. Chk.(2), probably planted. The trees from the two localities are very unlike in foliage, but I cannot separate them on the material I have or on that consulted in different herbaria; nor have I been able to define the forms into the varieties of *P. stenoptera* of Franchet, Journ. de Bot. xii, 317–318 (1898).

FAGACEAE

Carpinus

C. laxiflora, Blume, var. Davidii, Franch. Klg., a small tree.

C. ———. Chk., small tree in foliage only; not identifiable with the preceding species.

Castanea

C. Henryi, Rehd. & Wils. (*C. Vilmoriniana*, Dode). Klg.; medium-sized tree.

C. mollissima, Blume. Chk., from a tree 30 ft. high.

C. Seguinii, Dode. Klg. (2), a small tree or large shrub. Chk.(2), a bush or very small tree on the mountains.

Corylus

C. Avellana, L. Sh., planted.

C. heterophylla, Fisch., var. sutchuensis, Franch. Klg.(2), strong shrub.

Quercus

†Q. aliena, Blume, var. pubipes, Rehd., Journ. Arn. Arb. I, 136. Chk.(2) founded on my collection. A low bush on the mountain side. The specimens are gall-bearing.

Q. aliena var. pellucida, Blume. Chk. Ksh.

Q. Fabri, Hance. Chk., near base of mountain.

Q. glandulifera, Blume. Chk.

Q. myrsinaefolia, Blume. Chk.

Q. serrata, Thunb. Sh.(2), planted. Ksh., planted for silkworms. Ksh., in the wild, juvenile form.

Q. variabilis, Blume. Ksh.(3).

ULMACEAE

(Determined by Camillo Schneider)

Celtis

C. Biondii, Pamp. Kiukiang, Prov. Kiangsi. Ksh., temple in the hills. Possibly planted in both cases.

C. Bungeana, Blume. Ksh., tree, trunk 1 ft. diam.

C. sinensis, Pers. Sh.(4), planted.

Pteroceltis

P. Tatarinowii, Maxim. Ksh.

Ulmus

U. parvifolia, Jacq. Sh., planted.

U. pumila, L. Ching-lung-chioa, n. w. of Peking.

U. Wilsoniana, Schneid. Klg., typica. Another collection at Kuling, without fruit, is probably var. *psilophylla*, Schneid.

Zelkova

Z. sinica, Schneid. Sh.(2), planted. Chk., small tree in the wild. Ksh., wild in the hills, with flaky bark.

MORACEAE

Broussonetia (determined by Camillo Schneider).
B. Kaempferi, Sieb. Chk.(2), bush with red fruit.
B. papyrifera, L'Her. Sh.(3). Ksh. Planted.
Cudrania
C. tricuspidata, Bur. Chk.

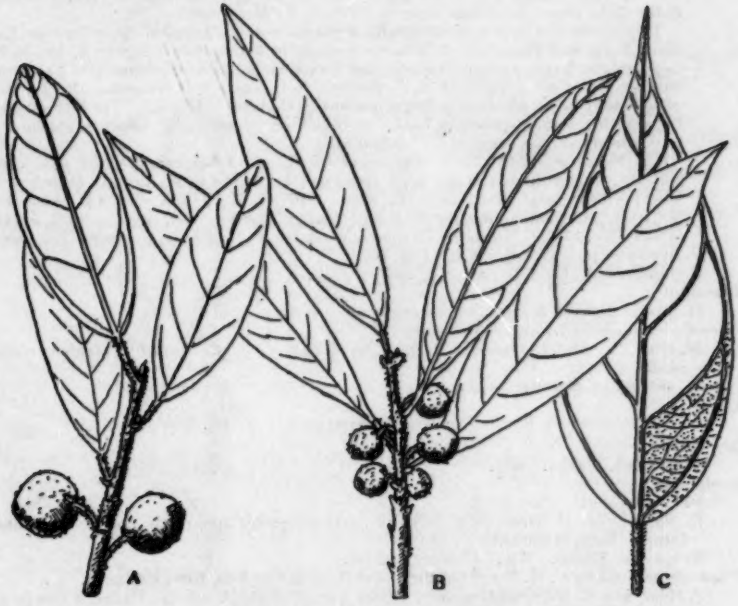

FIG. 4. FICUS.—A, F. IMPRESSA, CHAMP. B C, F. BAILEYI, HUTCH.

Ficus (doubtful material was placed in the hands of J. Hutchinson, Royal Botanic Gardens, Kew, England, who found it to represent an undescribed species).
F. Carica, L. Hankow, planted.
†F. Baileyi, *Hutchinson*, sp. nov. (*F. impressa*, Hemsl. in Journ. Linn. Soc. Bot. xxvi, 463 (1899), partim, non Champ.)

Planta erecta vel scandens; ramuli cortice subcinereo deciduo obtecti, demum fere glabri, hornotini appresse fulvo-pubescentes, laxe foliati: folia oblonga vel oblongo-lanceolata, basi obtusa vel rotundata, apice longe caudato-acuminata, acuta, 3–7 cm. longa, 1.5–3 cm. lata, integra, rigide chartacea, utrinque breviter parce pubescentia vel fere glabra, infra inter venas prominenter foveolata, crasse reticulata; nervi laterales utrinsecus circiter 8, a costa sub angulo lato abeuntes, intra marginem conspicue crenate conjuncti; petioli 5–8, mm. longi primum fulvo-tomentosi, demum fere glabri; stipulae mox deciduae, lanceolato-triangulares, obtusae, circiter 4 mm. longae, basi 2 mm. latae, coriaceae, extra fulvo-tomentosae: receptacula axillaria, solitaria, breviter pedunculata, ovoideo-globosa, circiter 7 mm. longa et 6 mm. diametro, parce pubescentia; pedunculi usque ad 2 mm. longi, tomentosi: bracteae basales 3, late ovatae, acutae, 2 mm. longae, basi 1.75 mm. latae, rigidae, extra parce pubescentes: ostiolum extra dense pubescens, bracteis membrance is transverse imbricatis: flores ♂ subsessiles infra bracteas dispositi; perianthii segmenta plerumque 4, elliptica, apice rotundata, submembranacea, glabra; antherae 2, circiter 1 mm. longae, acutae: achaenia laevia, oblique ellipsoidea.

Chi-kung-shan, upright on rocks, June 13, 1917, (type). A specimen, without figs, collected at Kuling, Province of Kiangsi, on July 9th, probably belongs here also; its leaves (see Fig. 4) are more oblong-elliptic than in the type plant, but numerous gradations between the two forms of leaf are shown in the following specimens also referable to this species:—Hupeh Province: Nanto and mountains to the northward, *A. Henry* 2691; 3012. Patung district, hanging on walls of cliffs, *A. Henry* 3698. Ichang, *A. Henry*, 1095; *Maries*. Hsingshan, *A. Henry* 6506. Kiangsi Province: near Kiukiang, *Maries*. Chekiang Province: Ningpo Mountains, Aug. 1885, *E. Faber* 250; near Chang-hua, July 12, 1915, *F. N. Meyer* 1563.

This species has been associated with *Ficus impressa*, Champion, from the island of Hong Kong, and from which I think it can easily be distinguished (see fig. 4, A). In *F. impressa* the leaves are quite obtuse and sometimes slightly emarginate at the apex, and are never acuminate as in *F. Baileyi* (B, C), and in *F. impressa* the figs are considerably larger on slightly longer peduncles than in *F. Baileyi*. The latter seems to be rather widely spread in East Central China, whilst true *F. impressa* appears to be confined to Hong Kong.—*J. Hutchinson.*

The Ficus material in the herbarium of the Arnold Arboretum has been gone over and Mr. Rehder finds the following specimens belonging to *F. Baileyi:* Hupeh province: Chang yang Hsien, 4000 ft., Sept., 1907, E. H. Wilson (No. 131; bush 2-3 ft.; fruit blue-black). Kiangsi Province: Kuling, 2000 ft. alt., Aug. 1, 1907, E. H. Wilson (No. 1587). Szechuan Province; Mo tzuai. Aug., 1891, v. Rosthorn (No. 408).

F. heteromorpha, Hemsl. Klg.; fruit red.

F. pumila, L.? Chk.(2), on rocks, without fruit.

Humulus

H. japonicus, Sieb. & Zucc. Wuchang, weed. Ksh., wild in the hills.

Morus (determined by Camillo Schneider).

M. alba, L. Sh.(3), planted. Klg.(3), as if native. Chk., probably planted; fruit black.

M. cathayana, Hemsl.? Chk.

URTICACEAE

Achudemia

A. japonica, Maxim. Klg.

Boehmeria

B. nivea, Gaud. Chk., wild.

B. platyphylla, D. Don. Klg. Chk.(2), one collection apparently one of the many forms. Ksh., in the hills.

B. spicata, Thunb. Klg. Flowers pinkish.

Pilea (determiued by C. H. Wright of the Royal Botanic Gardens, Kew, England).

†P. Henryana, C. H. Wright, sp. nov. Species ex affinitate P. *peltatae*, Hance, a qua foliis non peltatis differt; a P. *ozyodonte*, Wedd., foliis dentibus paucioribus subobtusisque instructis et pedunculis brevioribus distinguitur.

Herba 6–12 cm. alta: folia ovata, obtusa, usque ad 2 cm. longa et 1.3 cm. lata, utrinque dentibus subobtusis 4–6 praedita, facie superiore cystolithis numerosis linearibus instructa, facie inferiore saepius maculis brunneis parvis orbicularibus notata, pinnatim 3- vel 5-veniis; petiolus basalis, filiformis, usque ad 1 cm. longus: inflorescentia quam folia multo brevior; pedunculus ♂ ramos paucos brevesque gerens: perianthii lobi 4, rotundata, obtusa; 0.75 mm. longi, glabri: Antherae rotundatae, albae: pedunculus ♀ 3 mm. longus, paucis glomerulis instructus: perianthium 3-lobum; lobus posterior oblongus, concavus, 0.75 mm. longus, alii 0.25 mm. longi: achaenium oblongum, compressum, obtusum, leve, 1 mm. longum.—*Pilea* sp., C. H. Wright in Journ. Linn. Soc., Bot. vol. xxvi, p. 480. Fig. 3.

Chekiang; Ningpo mountains, *Faber* 312; Kiangsi; Kuling, Lat. 29.1–2° 2500–3500 ft., *L. H. Bailey*; Hupeh; South Patung, *A. Henry*, 7295.

The discovery in 1917 of the male inflorescence by L. H. Bailey has rendered it possible to draw up a full description of this species, which was left unnamed when the Chinese material was worked out for the Index Florae Sinensis. It bears a considerable resemblance to *Achudemia japonica*, Maxim., from which it is distinguished by the female perianth, as well as by the cutting of the leaves. While the leaves are furnished with numerous linear cystoliths on their upper surface, there are few underneath, where in Dr. Bailey's specimens their places are occupied by circular brownish spots (less numerous in Dr. Henry's material), which at first sight resemble minute fungi, but in which no traces of hyphae have been found. The longer inflorescences and leaves with more numerous and more acute teeth distinguish *P. ozyodon*, Wedd., from the present species.—*C. H. Wright.*

Pouzolzia

P. hirta, Hassk. Klg.(2), one collection plants erect, the other plants prostrate.

SANTALACEAE

Thesium

T. chinense, Turcz. Chk.

ARISTOLOCHIACEAE

Aristolochia

A. mollissima, Hance. Chk.

POLYGONACEAE

Fagopyrum

F. esculentum, Moench. Klg., spontaneous; differs in habit from the common buckwheat.

Polygonum

P. alatum, Buch.-Ham. Klg.(2). Chk.
P. aviculare, L. Near Chk., in paddy field.
P. Blumei, Meissn. Klg.(2), Ksh., in the hill country.
P. cuspidatum, Sieb. & Zucc. Chk.
P. dissitiflorum, Hemsl. Klg.(2).
P. erectum, L. Sh., weed.
P. lapathifolium, L. Ksh.
P. lapathifolium var. incanum, Koch. Klg. Chk.
P. orientale, L. Wuchang, weed. Ksh.(2).
P. perfoliatum, L. Klg.(2).
P. Posumbu, Buch.-Ham.? Chk.
P. sagittatum, L. Klg.

Rumex

R. Acetosa, L. Sh.(2), common. Chk.
R. Acetosella, L. Klg. Chk., in lawn.
R. crispus, L. Sh. Chk.(2). Ksh., in the hills.
R. dentatus, L. Sh.(2). Ksh. This species (as named in Forbes and Hemsley, Index Florae Sinensis, Hb. Kew) is also cult. by Chinese at Shanghai as Liang-lien-zoo.

CHENOPODIACEAE

Beta

B. vulgaris, L. Wuchang, an escape along a street. Sh.(3), as cult. by Chinese, and grown by me at Shanghai; vernacular name is Oong-dien-ts'ai. I have also grown the beet from Japanese seed.

Chenopodium

C. album, L. Sh.(2). Wuchang. Chk. Ksh. Several forms.
C. amaranticolor, Costa & Reyne. Wuchang, weed, 3 ft.; small top leaves violet. This plant is apparently very widely spread, turning up in the U. S. both wild and cultivated. It agrees with plants I have grown from European commercial seeds. I do not know the relation this plant bears to *C. album* vars. *centrorubrum* and *purpurascens*, Makino, Obs. Fl. Jap. fasc. x, 4 (from Bot. Mag. Tokyo, 1910).

Spinacia

S. oleracea, L. Sh.(5), cult. by Chinese (as Poo-ts'ai), and grown by me in Shanghai from roots from the market. I have also grown spinach at Ithaca from Chinese and Japanese seeds; it is all the so-called prickly seeded race (*S. oleracea*, L.).*

AMARANTHACEAE

Amaranthus

A. Blitum, L. Wuchang (2). Chk.
A. gangeticus, L. Sh.(3), sold in market and cult. Hankow, market. Also grown at Ithaca from Chinese seed. Commonly grown for food. It is seen in both the green-leaved and the tricolor forms.
†A. gangeticus, L., var. angustior, var. nov. Folia lanceolata vel lanceolato-ovata, lamina 6–8 cm. longa et 2–3 v. 4 cm. lata, apicem versus anguste attenuata sed obtusa, apicu-

*S. oleracea L., var. glabra, Guerke (*S. glabra*, Mill. Gard. Dict. Spinacia No. 2. 1768. *S. inermis*, Moench, Meth. 318. 1794), the "round seeded" spinach, mostly grown in America, I did not see in China, nor is it represented in the kinds I have grown from oriental sources.

lata.—This narrow-leaved form I have grown at Ithaca from seeds from southern China (type), where it is cult. for food as "spinage"; also from American commercial seeds in the purple-leaved form as "*A. salicifolius*, fountain plant", for ornament, but very different from *A. salicifolius*. Veitch, Gard. Chron. 1871, 1550.

A. paniculatus, L. Chk., cult. for ornament by missionary.
A. spinosus, L. Sh. Wuchang
A. viridis, L. Sh. Wuchang(2). Hankow.

Celosia
C. argentea, L. Sh.

NYCTAGINACEAE

Mirabilis
M. Jalapa, L. Sh., cult.; white-flowered.

PHYTOLACCACEAE

Phytolacca
P. esculenta, Van Houtte. Ksh.

PORTULACACEAE

Portulaca
P. oleracea, L. Wuchang; weed.

BASELLACEAE

Basella
B. rubra, L. (*B. oleracea*, Alef.). Grown at Ithaca from seeds received from Canton, where the plant is raised for food. *B. alba*, L., which I have grown from other sources, seems to be distinct, although often united by botanists.

CARYOPHYLLACEAE

Arenaria
A. serpyllifolia, L. Chk. (3).

Cerastium
C. viscosum, L. Sh.(2), common weed. Chk.
C. vulgatum, L. Chk.

Dianthus
D. barbatus, L. Sh., cult.
D. chinensis, L. Chk.(6), Ksh., all truly wild. Also collected from cult. plants in Sh. and Chk.; the relation of the cultivated race to the native stock is a problem for careful study; the two are quite unlike.
D. superbus, L. Chk., Ksh.(3), all in the wild and native.

Lychnis
L. coronata, Thunb. Hankow, planted.

Sagina (determined by M. L. Fernald, Gray Herbarium).
S. maxima, Gray. Sh.(3), in lawns and by roads.

Silene
S. aprica, Turcz. Chk.(2). Ksh.(2).
S. Armeria, L. Sh., cult. Hankow, escaped.
S. conoidea, L. Chk., apparently escaped or adventive.

Stellaria
S. aquatica, Scop. Sh.(3). Chk.(3).
S. chinensis, Regel. Klg. Chk.(2).
S. media, Cyrill. Sh.(2).

NYMPHAEACEAE

Nelumbo
N. nucifera, Gaertn. (*Nelumbo speciosum*, Willd.) Wuchang, planted in pond for the edible roots; common in China.

CERATOPHYLLACEAE

Ceratophyllum
C. demersum, L. Kiukiang, Prov. Kiangsi.

RANUNCULACEAE

Aconitum
A. volubile, Koelle? Klg.; somewhat twining, in foliage only.
A. ———. Chk, in foliage.

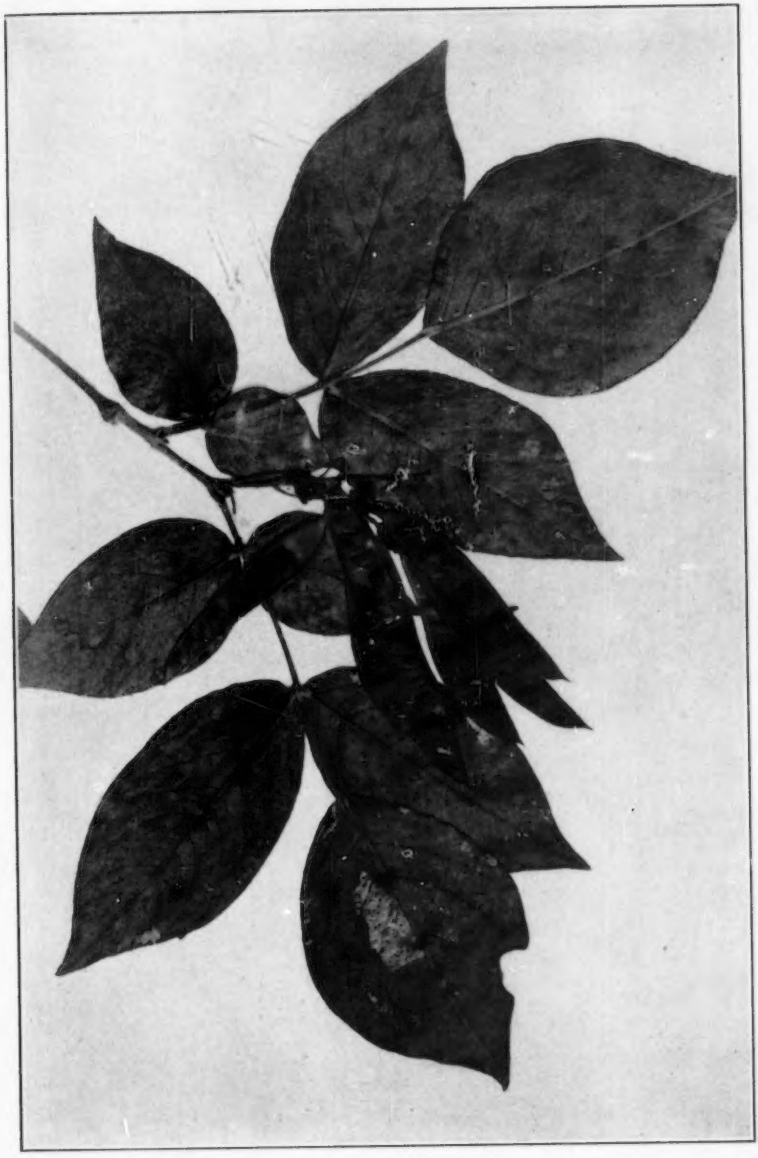

Fig. 9. Maackia honanensis.

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FIG. 10. VICIA KIOSHANICA.

Anemone
A. chinensis, Bunge. Chk. Ksh.
A. japonica, Sieb. & Zucc. Klg.
Aquilegia
A. chrysantha, Gray? Chk., in a missionary's garden; in fruit.
Clematis
C. Benthamiana, Hemsl. Ksh., in the hill country.
C. chinensis, Retz. Klg.
C. chinensis f. vestita, Rehd. Chk.
C. grata, Wall., var. grandidentata, Rehd. & Wils. Klg.
C. mandschurica, Rupr. (*C. recta*, L., var. *mandshurica*, Maxim.). Chk.
C. montana, Buch.-Ham. Klg.
Isopyrum
I. adoxoides, DC. (*Semiaquilegia adoxoides*, Makino). Sh.(2).
Paeonia
P. albiflora, Pall. Chk., cult.
P. obovata, Maxim. Chk., in the wild.
Ranunculus
R. acris, L., sens. lat. Klg. Leaves much less divided than in *R. acris* proper. The oriental forms passing under this name need careful study, with abundant material.
R. arcuans, Chien (Rhodora xviii, 190). Sh.(2).
R. chinensis, Bunge (*R. pennsylvanicus*, Auth., not L. *R. brachyrhynchus*, Chien). Sh.(2). Chk.(2).
R. extorris, Hance. Sh.(3). Chk. I am not satisfied with the reference of this species to *R. ternatus*, Thunb.
R. japonicus, Thunb.? (*R. propinquus* var. *hirsutus*, Gray). Sh. I had given this plant a new specific name, but await further material.
R. sceleratus, L. Sh.

LARDIZABALACEAE

Akebia
A. lobata, Decne., var. australis, Diels. Chk.
Sargentodoxa
S. cuneata, Rehd. & Wils. Klg., a strong long-running woody vine. This collection makes a long eastward extension of the range of this remarkable plant. It has heretofore been known, in its eastward range, from Western Hupeh and S. W. Hunan, the latter collected by Handel-Mazzetti. My specimen is in foliage only. The leaflets are thick and heavy, and rather more obtuse than in other material I have seen; possibly distinct. This genus may need to be separated from the Lardizabalaceae.

BERBERIDACEAE

Aceranthus
A. sagittatus, Sieb. & Zucc. (*Epimedium sagittatum*, Baker). Klg. In foliage only; leaves very glaucous-blue beneath, in this regard matching Faber 472 from Chun City, which is referred doubtfully to *A. sagittatus*.
Berberis (determined by Camillo Schneider).
B. virgetorum, Schneid. Klg., a tall bush.
Mahonia
M. Fortunei, Fedde. Sh., planted.
Nandina
N. domestica, Thunb. Sh. Chk. Both planted.

MENISPERMACEAE

Cocculus
C. trilobus, DC. Klg. Chk.(3). In its different forms seems to be divisible, but the leaf variations are inconstant.
Menispermum
M. dauricum,, DC. Chk.
Stephania
S. japonica, Miers. Kiukiang, Prov. Kiangsi.

MAGNOLIACEAE

Liriodendron
L. chinense, Sarg. Klg., small native tree.

Magnolia
M. denudata, Desr. Sh.(3), planted. Klg., apparently native. Chk., planted but said to have come from the wild.
M. grandiflora, L. Sh.(2), planted.
M. liliflora, Desr. Sh.(2), planted.
M. officinalis, Rehd. & Wils., var. biloba, Rehd. & Wils. Klg.
Michelia
M. fuscata, Blume. Sh., planted.
Schisandra
S. propinqua, Hook. f. & Thoms., var. sinensis, Oliv. Klg.
S. sphenanthera, Rehd. & Wils. Chk.
S. ———. Other collections at Chk.(6); not positively determinable; foliage only.

CALYCANTHACEAE

Meratia (Chimonanthus)
M. praecox, Rehd. & Wils. Sh.(3). Ksh., in temple grounds. Both planted.

LAURACEAE

Benzoin
B. glaucum, Sieb. & Zucc. (*Lindera glauca*, Blume). Chk.(3); clean attractive upright bush or small tree.
B. reflexum, Rehd. (*L. reflexa*, Hemsl). Klg. Chk.(2). Bush with yellow-green bark (not tough), and sassafras odor.
B. rubronervium, Rehd. (*L. rubronervia*, Gamble). Klg.; tree-like.
Cinnamomum
C. Camphora, Nees & Eberm. Sh.(2). planted.
Litsea
L. citrata, Blume. Klg.; small tree.
L. fruticosa, Gamble. Klg.; bush with green bark; leaves declined nearly vertical. There may be some confusion in this species.
Sassafras
S. Tzumu, Hemsl. Klg.

PAPAVERACEAE

Corydalis
C. racemosa, Pers., sens lat. Ksh., growing on the city wall.
Macleaya (Bocconia)
M. cordata, R. Br. Chk.(3); common in the wild, growing from 20 in. to several feet tall.

CRUCIFERAE

Brassica
The brassicas are much cultivated in China, and are also spontaneous. A treatment of them, as well as of other cultivated brassicas, is reserved for a separate paper.
Capsella
C. Bursa-pastoris, Medic. In many forms: Sh.(8). Chk. Ksh. It is cult. by the Chinese for the rosette of edible leaves, under the name of Zee-ts'ai, and it is abundant in the markets in spring.
Cardamine
C. flexuosa, With. Sh.(2), in a lawn.
Cheiranthus
C. Cheiri, L. Sh., cult.
Coronopus
C. didymus, Smith. Sh.(2): weed.
Hesperis
H. matronalis, L.? Klg., a diminutive specimen, apparently a waif.
Iberis
I. amara, L. Chk., along roadside near buildings; apparently an escape.
Lepidium
L. ruderale, L. Ksh., a yard weed.
Raphanus
R. sativus, L. Most of the characteristic radish forms of the Orient are distinct from those of Western cultivation in the long-pinnate radical leaves, which sometimes attain 2 ft. in length, narrow in proportion to length being oblong in outline, with leaflets (often as many as 12 pairs) oblong and mostly opposite and separate, giving the leaf a very pinnate character. It is a turnip-leaved radish. On the other hand, I have

grown from Chinese seeds a form with entire leaves, the margins perhaps even not dentate. These two classes may be separated as follows*:

†R. sativus, L., var. longipinnatus, var. nov. Radix plerumque magnus elongatusque, solito hibernans; folia radicalia elongata, demum 3–6 dm. longa, angusta, foliolo terminali magno lobato; foliola lateralia vel lobi utrinque 8–12, pleraque bene distincta, deorsum sensim decrescentia, oblonga, obtusa vel obtusiuscula.

†var. nonpinnatus, var. nov. Folia integra, radicalia manifeste obovata, caulinia ovalia vel oblonga, omnia in petiolum attenuata, margine undulata, obscure crenato-dentata vel integra.

The var. *longipinnatus* is more or less familiar to American gardeners who have grown the Chinese and Japanese radishes. I have grown it from both sources. The roots of this particular race are not used as spring and summer delicacies or accessories to the table, but are large, hard and substantial, supplying an article of food comparable with turnips. They are much eaten in the winter and the following spring. Forms of the common occidental spring and summer radish, however, are also grown in the Orient. I have not been able to find a suitable published Latin name for this very marked oriental plant. I was inclined to utilize *Raphanus chinensis* (*chinensus*) of Phillip Miller (although the plant is more characteristically Japanese than Chinese). This name, however, is founded on the undesignated "Raphanus chinensis annuus oleiferus" of Linnaeus, Sp. Pl. ed. ii:935, as a form of *R. sativus*, and there is no description of the foliage in either Linnaeus or Miller. Probably any of the classes of radishes may yield seed rich in oil, and there is now little indicaton of the plant that Linnaeus knew or had in mind. Nor am I inclined to use *R. acanthiformis*, Morel (apud Trouard Riolle, Raphanus) which was applied apparently to a wild plant with imbricated leaflets or divisions. Nor has it seemed wise to raise and extend the "forma" *raphanistroides*, Makino (Obs. Fl. Jap. fasc. ix, 25, from Bot. Mag. Tokyo, 1909) to cover the cultivated pinnate-leaved radish of the Orient. Makino described his plant as having a "root not thick, hard". It grows on the "sandy shore," and although he thinks "it is undoubtedly a form escaped from the cultivated common radish," he speaks of the leaves only as lyrate, leading one to infer that it may be an escape of *R. sativus* forms rather than var. *longipinnatus* forms. Trouard Riolle concludes that all the varieties of cultivated radish appear to be derived from two distinct types, *R. sativus*, L., and *R. sativus*, f. *raphanistroides*, Mak. (*R. acanthiformis*, Morel). I desire not to complicate the history and the evolution by proposing a name to cover wild or spontaneous forms, or phylogenetic types, from which any of the radishes may have come; I give a name to the cultigen for descriptive purposes, quite independent of controversy, to cover certain existing oriental cultivated forms at least until the origin and evolution are cleared up.

Roripa

†R. microsperma, n. tr. (*Nasturtium microspermum*, DC. Syst. ii, p. 199). Chk., in rice paddy.

R. montana, Small (*Nasturtium montanum*, Wall.). Sh.(3), a lawn weed, of many statures.

Sisymbrium

S. Sophia, L. Ksh.

Thlaspi

T. arvense, L. Sh.(2).

DROSERACEAE

Drosera (determined by J. M. Macfarlane, Univ. of Pennsylvania)

D. peltata, Smith. Klg.

CRASSULACEAE

Penthorum

P. chinense, Pursh. Chk.

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*Still another race may be separated botanically, alt[hough] I have not had it from China:

†Var. parvipinnatus, var. nov. Radix plerumque [parv]nus: planta parva et tenuis: folia parva, lobo terminali expanso communis formae Raph[anistroides] [pa]vi carentia; radicalia 4-8 vel 10 cm. longa, 2-3 cm. lata, circuitu obovata, incisa vel divisa [in] s parvos angustos tamen in parte inferiore; caulinia minora, varie lobata vel indivisa lobis [lin]um linearibus: fructus minor et tenuior, 4-6 cm. longus et 0.5 cm. vel minus crassus, manif[este] nodulosus, rostro longo et gracili.—This plant I received from India, having grown it from [seed] supplied by Lloyd Botanic Garden, Darjeeling. The former is cult. by the Bhutiyas at an altitude of 6000 to 8000 ft.; root described as large and white, eaten raw and cooked. The latter is cult. by the Nepalese, at 2000 to 5000 ft., root small white, eaten raw or cooked. The small leaves with many variable mostly narrow divisions, the slender moniliform pods often with 5 to 7 joints and a very slender awl-like beak, as well as small stature, sufficiently mark this interesting race. I am now growing plants from Japanese sources that belong to this botanical race.

Sedum (determined by R. Lloyd Praeger, Dublin, Ireland).

The collection of Sedums, yielding the new species *S. Baileyi*, *S. limuloides*, *S. quaternatum*, has been published by Mr. Praeger in Proc. Roy. Irish Acad., March, 1919, to which the student is referred for a fuller account. He states that "the collection, though small, is of considerable interest. The eleven numbers include eight species,

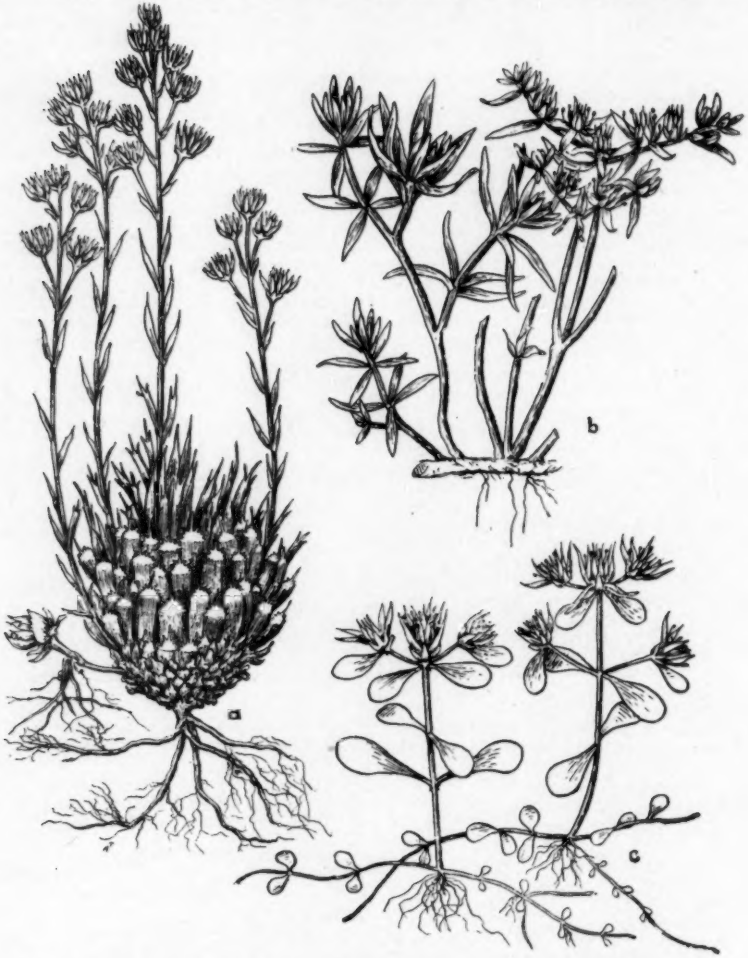

FIG 5. SEDUM. a, S. LIMULOIDES, PRAEGER. b, S. QUATERNATUM, PRAEGER. c, S. BAILEYI, PRAEGER.

three of which are new. Of the species previously described, *S. lineare*, Thunb., long known from Japan, is hitherto unrecorded from China. Of the new species, one plant [*S. Baileyi*] is related to a small and well-marked group which, as hitherto known, was confined to the Caucasus and Asia Minor, while another [*S. limuloides*] is a remarkable species with leaves which are unique in the large genus to which it belongs, and with

other unusual characters showing interesting affinities". The three new species described by Mr. Praeger in his paper are illustrated in Fig. 5, the engravings being reduced from his prints and all the details omitted.

S. Aizoon, L. Ksh., in the hill country; flowers yellow.

S. Aizoon var. scabrum, Maxim. Chk.; deep yellow.

S. Alfredi, Hance. Sh.

†S. Baileyi, Praeger. Klg. "A very interesting little plant, closely allied to the species constituting the *Involucrata* group of Maximowicz, of which *S. spurium*, M. Bieb. and *S. stoloniferum*, S. T. Gmel., are the best-known species, and which, as hitherto known, was confined to the Caucasus and Asia Minor".

S. drymarioides, Hance. Klg.

†S. limuloides, Praeger. Ksh. "Its fantastic leaves are without parallel in the genus to which it belongs. The white horny spined sheaths which envelop the leaf-tips are very persistent, and clinging to the old rotting leaves, are strikingly suggestive of small white crustacea or arachnids crawling on the plant."

S. lineare, Thunb. Chk.(2); flowers yellow; covering banks with long decumbent shoots.

†S. quaternatum, Praeger. Chk. "From all Asiatic Sedums the present species can be distinguished by its combination of lanceolate acute verticillate leaves and divergent fruit."

S. viscosum, Praeger. Chk. "Quite recently described from Yunnan specimens (Journ. of Bot. 1919, p. 57)."

SAXIFRAGACEAE

Astilbe

A. chinensis, Franch. & Sav. Klg.

A. Davidii, Henry. Chk.; pink-purple.

Cardiandra

C. sinensis, Hemsl. Klg.(3); flowers sometimes pink and sometimes white.

Deutzia

D. grandiflora, Bunge. Ching-lung-chioa, n. w. of Peking.

D. scabra, Thunb. Sh.(3), planted. Klg., wild.

Hydrangea

H. paniculata, Sieb. Klg.(2), native.

H. umbellata, Rehd. Klg.(3).

Philadelphus

P. grandiflorus, Willd., var. or hybrid. Sh.(2), planted.

†P. incanus, Koehne, var. Baileyi, Rehd., var. nov. A typo differt foliis minoribus subtus sparsius strigoso-pilosis pilis strictis, racemis densis 2–4 cm. longis 5–7-floris, stylo breviore.—Frutex humilis: folia elliptico-ovata (ramulorum floriferorum tantum adsunt), 2–4 cm. longa, serrulata, supra glabra, subtus pilis strigosis sparse obtectis; pedicelli 2–4 mm. longi; corolla circiter 3 cm. diam.; stylus 4 mm. longus, fere usque ad medium divisus, staminibus brevior, glaber.—Chi-kung-shan, low bush, frequent, June 13. This variety is distinguished from typical *P. incanus* at the first glance by the smaller leaves and by the dense short racemes. The pubescence of the under side of the leaves is more strigose and less dense than in typical *P. incanus*, but denser than in *P. incanus* var. *Sargentianus*, Koehne. Dr. Bailey found it as a low bush, while *P. incanus* is a tall shrub up to 4 m. high.—*Alfred Rehder.*

Saxifraga

S. sarmentosa, L. Sh., spontaneous or native in shady places. Chk., native.

PITTOSPORACEAE

Pittosporum

P. Tobira, Ait. Sh.(3), planted and more or less spontaneous.

HAMAMELIDACEAE

Corylopsis

C. sinensis, Hemsl. Klg.

C. spicata, Sieb. & Zucc. Sh., planted.

Fortunearia

F. sinensis, Rehd. & Wils. Chk., small tree.

Liquidambar

L. formosana, Hance. Chk.(2).

Loropetalum

L. chinense, Oliv. Klg.

EUCOMMIACEAE

Eucommia

E. ulmoides, Oliv. Chk.(2); apparently planted, probably transferred from the wild.

PLATANACEAE

Platanus

P. acerifolia, Willd. Sh.; much planted. Chk., planted. Another specimen from Chk., a small virgin tree, is strikingly like *P. parviloba*, Henry, one of the variants of the *P. orientalis* × *P. occidentalis* cross (*P. acerifolia*).

ROSACEAE

Agrimonia

A. pilosa, Ledeb. Chk.(2).

Crataegus

C. cuneata, Sieb. & Zucc. Klg.(3). Chk.(2). Common. A scrubby bush on the mountains, 2–4 ft. tall. Often infested with gymnosporangium.*

C. hupehensis, Sarg. Klg., large, broad shrub. Chk., very large tree-like shrub.

C. pinnatifida, Bunge. Sh., planted.

C. ———. Chk., erect shrub, leaves only.

Duchesnea

D. indica, Focke. Sh.(3). Chk. Lawns.

Eriobotrya

E. japonica, Lindl. Kiukiang, Prov. Kiangsi, by a house, apparently planted.

Exochorda

E. racemosa, Rehd. (*E. grandiflora*, Lindl.) Hankow, planted. Chk., in the wild and common.

Fragaria

F. elatior, Ehrh.? Klg.(3). Chk. Ksh. All past flowering and fruiting.

Geum

G. strictum, Ait. Klg.

Kerria

K. japonica, DC. Sh., planted

Photinia

P. serrulata, Lindl. Sh.(4), planted; one of the characteristic grave-mound trees.

P. subumbellata, Rehd. & Wils. Klg.(3), bush.

Potentilla (some of the specimens determined with reservations)

P. ancistrifolia, Bunge. Ksh.(2). One of the collections, from the hills, is much reduced, forming compact plants 2 or 3 in. high.

P. chinensis, Ser. Chk.(3).

P. discolor, Bunge. Sh., lawn weed. Chk. Ksh. The two latter are the large form.

P. Kleiniana, Wight & Arn. Chk.(3).

P. reptans, L. Sh. Ksh., with leaflets mostly 3.

P. supina, L.? Chk., paddy field. Ksh., on dry hard ground spreading closely on the surface. Leaflets mostly 3 in both collections.

Prunus

P. armeniaca, L. Chk. in the wild as if native but perhaps only scattered. Ksh.(2), cult. and also in the wild, perhaps spontaneous.

P. armeniaca, var. Ansu, Maxim. Ksh., old tree in the hills as if wild or spontaneous.

P. Buergeriana, Miq.? Klg.(2), in foliage only; small trees, suggesting *P. pennsylvanica*.

P. Conradinae, Koehne? Klg. Chk.(2). Spreading small trees, past flower and fruit.

P. glandulosa, Thunb. Sh., planted. Chk., wild near base of mountain, with small red fruit. Ksh., wild and native in the hills, 1–2 ft., fruit red and abundant.

P. japonica, Thunb. Sh.(2). Hankow. All planted.

P. Lannesiana, Wils. (*P. serrulata*, Auth. in part). Sh., planted. A common "flowering cherry" in Japan and planted in Korea, but in China I found it only in a park in Shanghai and then as a small tree recently planted.

P. Mume, Sieb. & Zucc. Sh.(9), planted, and attractive, particularly in the semi-double forms. This is the "plum blossom" of Japan. I took what appears to be the same species (in foliage only) in Chk.(3), once planted and twice in the wild, the latter

*Specimens were submitted to Professor Frank D. Kern, State College, Pa., who writes: "This appears to be *Gymnosporangium Photiniae* (P. Henn.) Kern, and is the aecidial stage of *Gymnosporangium japonicum*, Sydow. It extends the known range and also adds a new host. Heretofore this has been known only from Japan and Korea and on Pourthiaea and Cydonia. Since many *Gymnosporangia* inhabit several genera of the apple family it is not strange that this should be found on Crataegus. The peridial cells have the characteristic spiny surface, and both peridial cells and spores agree with the other specimens I have."

perhaps spontaneous. (For a botanical arrangement of varieties of *P. Mume*, and other prunuses, including the peach, see Makino, Obs. Fl. Jap. fasc. viii, 25 st seq. from Bot. Mag. Tokyo, 1908).

P. Persica, Sieb. & Zucc. Hangchow, Prov. Chekiang (2), Sh. (8), all cultivated. Chk. (2), Ksh., in the wild. Ching-lung-chiao, n. w. of Peking. The peach is commonly grown, and there are many forms with double and semi-double flowers. Although I saw hundreds of trees, in different places, I saw none of the small-flowered race common in the United States. On the contrary, they were mostly unusually large-flowered, the flowers ranging about 1¾ in. across when fully expanded. One of the single-flowered collections had flowers 2⅛ in. across, and a double-flowered 2¼ in. The uniform large flowers are the more inexplicable inasmuch as the cult. trees came from many sources, some of them said to have been imported from California. Of the flat peach (*P. Persica* var. *platycarpa*, Bailey) I saw only a few fruits in the market, coming from the South. Of the wild peach I took specimens twice in the wild at Chi-kung-shan and once in the hill country back of Kioshan. The peach is not infrequent in these regions growing among the rocks as a bush or a bush-like tree with very small hard fruit, in places and positions where other plants are native. Fig. 1. Whether it is indigenous I am unable to say; doubtful.

P. Persica var. nucipersica, Schneid. Sh., planted. The flowers of this nectarine measured 1¾ in. across.

P. Pseudo-Cerasus, Lindl. Soochow, Prov. Kiangsu, a compact-headed small planted tree, the fruits prized for preserving. Sh., planted, flowers fragrant. Hankow, in a yard; this tree was pointed out to me by the late Frank N. Meyer as the typical form of this much-misunderstood species. This plant is wholly distinct from the *P. serrulata* or "flowering cherry" group with which it was long confused.

P. salicina, Lindl. (*P. triflora*, Roxb.). Hangchow, Prov. Chekiang, planted for fruit. Sh., a specimen taken in flower, apparently this species, growing on a canal bank. Chk.(4), three collections in the wild and native, a small spready tree with bluish fruit, one collection from a tree probably planted.

P. tomentosa, Thunb. Ksh., native in the hills.

P. ——. Klg.(2), small trees with cherry-like bark, the leaves suggesting *P. concinna*, Koehne; in foliage only.

Pyracantha

P. coccinea, Roem.? Sh., planted, a small spiny white-flowered bush. At first I took my plant to be *P. crenulata*, Roem., but since reading the discussion of the Himalayan *P. crenulata* by A. Bruce Jackson (Gard. Chron. Dec. 30, 1916) I am in doubt whether my plant represents that species. It is apparently not *P. Gibbsii*, Jackson, nor *P. crenulata* var. *Rogersiana*, Jackson, nor *P. discolor*, Rehd.

Pyrus

P. betulaefolia, Bunge. Ching-lung-chiao, n. w. of Peking, an old scraggly tree perhaps planted. Wusih, Prov. Kiangsu, in a garden. Ksh., tree of good size wild in the hills.

P. Calleryana, Decne. Klg.(6), a thorny bush or bush-like tree. Chk. Native.

P. ovoidea, Rehd. Sh.(2). Kiukiang, Prov. Kiangsi. Chinese city, Hankow. Ksh. All planted trees. Klg., apparently the same, a planted tree.

P. serotina, Rehd. Kiukiang, Prov. Kiangsi (3), planted tree, one perhaps a variant or hybrid. Chk., wild in a forest, 25–30 ft. high, with leaves hanging like those of a poplar.

P. serrulata, Rehd. Klg., a large tree, in the wild.

P. (Malus) spectabilis, Ait. Near Peking (2), planted.

P. (Malus) theifera, Bailey. Klg., tree 20–25 ft., perhaps planted.

Rosa

R. Banksiae, R. Br. Sh.(2), cult., yellow and white.

†R. cathayensis, n. st. (*R. multiflora*, Thunb., var. *cathayensis*, Rehd. & Wils. in Sargent, Pl. Wilson. ii, 304). A. *R. multiflora* differt foliolis plerisque majoribus et magis acuminatis (vel saltem non obtusis), saepius quam in illa specie 2-jugis, floribus pauciori-bus et majoribus 3–5 cm. diam. corymbosis potius quam paniculatis roseis, pedicellis longioribus et saepe glandulosissimis.

Shanghai cult. Kuling. Chi-kung-shan(4). A common wild plant in the Chi-kung-shan country: fls. rose-color or rose-pink, 1½ to 2 in. across; bush sometimes erect, sometimes weak and prostrate, apparently a smaller and weaker plant, as a rule, than *R. multiflora*. By this separation, the pink-flowered plant of China becomes a distinct species from the Japanese white-flowered smaller-leaved fragrant very floriferous rose, and this disposition, if accepted, will change the nomenclature of some of the cultivated roses. Whether the lines of separation between the two are always clearly marked, I do not know; but being familiar with the usual white-flowered *Rosa multiflora* (the

Rosa polyantha of horticulturists) I was struck with the unlikeness of the Chinese plant when I found it in the wild. *R. multiflora* itself is in cultivation at Shanghai, in charactersitic form. I am convinced that the separation, so well begun by Rehder and Wilson, is necessary to an understanding of these two roses. The Chinese plant is prevailingly distinguished by the larger and more acuminate-pointed leaflets, the larger and colored flowers which are in few-flowered more open clusters. *R. multiflora* is typically characterized by its many small flowers in a long cluster or panicle.

†R. cathayensis var. exigua, var. nov. Frutex humilis, tenuis; foliola parva et angusta, 3–4 cm. longa et 1–1.5 cm. lata; stipulae valde pectinatae.—Chi-kung-shan, and perhaps also a poor specimen from Kiu-kiang, Prov. Kiangsi.

R. chinensis, Jacq., derivatives. Sh.(2), planted. Chk., planted in a missionary's garden and said to be a "native Chinese rose brought up from the valley"; rose-pink, double.

R. Gentiliana, Lév. & Van. Klg.

R. laevigata, Michx. Near Kiukiang, Prov. Kiangsi, probably planted or spontaneous.

R. microcarpa, Lindl. Klg. Kiukiang.

R. multiflora, Thunb. Sh.(2), common planted rose.

R. odorata, Sweet, derivative. Sh., planted.

Rubus

R. corchorifolius, L. f. Chk.(2).

R. coreanus, Miq. Chk.(4). Canes very glaucous-white; fruit black, very like that of *R. occidentalis* but not so pulpy.

R. innominatus, S. Moore. Klg.

†R. innominatus var. Kuntzeanus, n. st. (*R. Kuntzeanus*, Hemsl. Journ. Linn. Soc. Bot., xxiii, 232). The glandular character of the inflorescence distinguishes this plant from *R. innominatus*, but it is not constant, and in other features the two plants seem to be the same. A similar variation occurs in *R. triphyllus*.

†R. innominatus, Moore, var. quinatus, var. nov. Foliola plerumque 5, quam in typo angustiora, pleraque lanceolato-ovata, sed interdum ovata, longe acuminata.—Kuling. Although Moore describes the lower lvs. of *R. innominatus* as "bijugatim pinnatis," his original type specimen at Hb. Kew shows only ternate lvs.; the terminal leaflets are lobed, and the leaflets are much broader than in the variety I have here separated. Whether this quinate variety is only an occasional state or variation I do not know, but I separate it in order further to define this variable species. My specimen is a terminal flowering part and not a mere adventitious shoot or lower lvs. All these collections of *R. innominatus* are from Kuling, near the place where Shearer (at Kiukiang) obtained the specimens, in 1873, on which the species was founded

†R. kulinganus, sp. nov. (Idaeobatus). Caulibus gracillimis inermibus epruinosis et foliolis angustissimis praestans; verosimiliter affinis *R. Idaeo*.

Planta tenuis, caulibus gracillimis 7–10 dm. longis laevibus glabris epruinosis inermibus, sed aculeis paucis parvis ad petiolos et pedunculos et interdum uno ad caules munitis: foliola 3, petiolo gracili insidentia, anguste lanceolata vel oblongo-lanceolata, terminale 4–6 cm. longum et 1–2 cm. latum, lateralia minora, omnia manifeste et argute dentata, acuminata, subtus albo-tomentosa; stipulae subulatae; inflorescentia simplex, pauciflora, pedunculis pedicellisque pilosis, bracteis parvis dimidios pedicellos aequantibus vel brevioirbus; flores parvi; sepala ovata, cuspidata, pubescentia et tomentosa; petala ignota: fructus parvus, intense ruber; semina manifeste reticulata. Fig.6.

Kuling, July 8. A very slender plant, scarcely woody and nearly spineless, with relatively large red fruits; on shrubby hillside.

R. Lambertianus, Ser. Chk.

R. palmatus, Thunb. Sh., planted or spontaneous.

R. pubescens, Weihe. Sh., planted for ornament; flowers pink.

R. tephrodes, Hance. Klg. Kiukiang, Prov. Kiangsi.

R. trianthus, Focke. Klg.(2).

R. triphyllus, Thunb. Chk.(6). Ksh. Fruit reddish or salmon-red, acid, the drupes few.

†R. triphyllus, Thunb., var. eglandulosus, var. nov. Inflorescentia glandulis conspicuis destituta.—Chk.(2). Wilson No. 1679 from Kuling and Henry 6375 from Hupeh, belong here.

I am not yet convinced that the Chinese plants passing as *R. triphyllus* are the same as the Japanese.

R. xanthocarpus, Bur. & Franch. Chk., in a missionary's garden, grown for the fruit as "Japanese raspberry."

R. ——. Klg., foliage only; suggests *R. crataegifolius*, but apparently not that species.

Sanguisorba

S. officinalis, L. Klg.

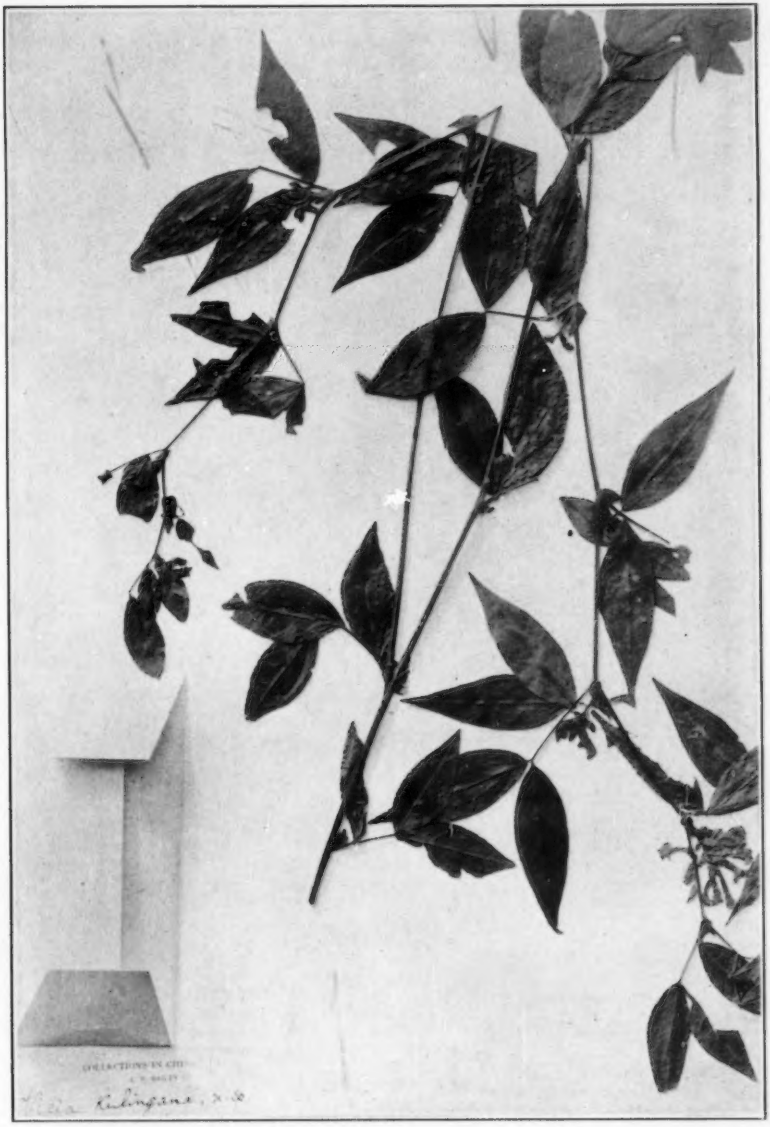

FIG. 11. VICIA KULINGANA.

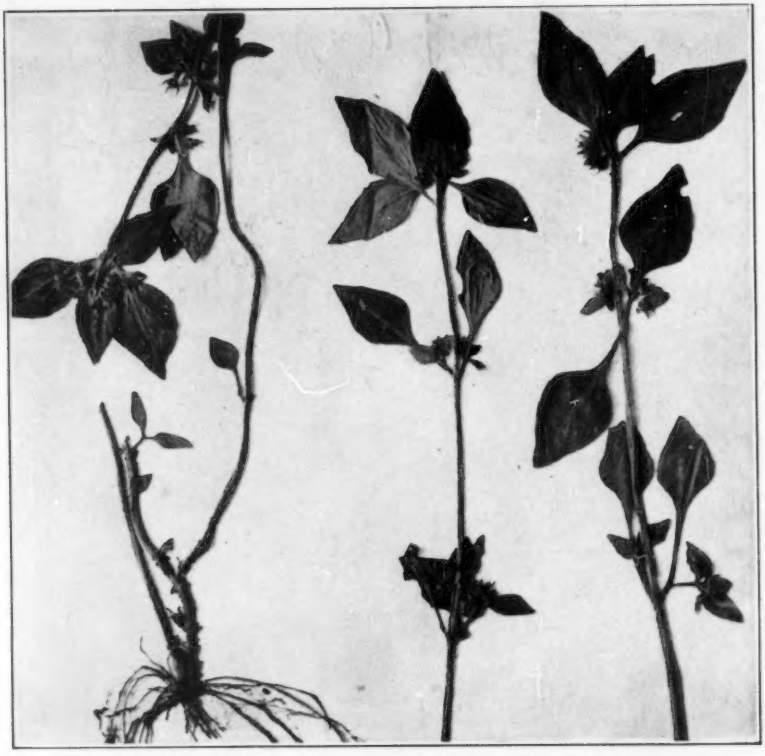

FIG. 12. LYSIMACHIA ARGENTATA.

Sorbus
S. Folgneri, Rehd. Klg.
S. Hemsleyi, Rehd.? Klg.
Spiraea
S. Blumei, G. Don. Klg.(2).
S. cantoniensis, Lour. Sh.(2), planted.
S. cantoniensis var. lanceata, Zabel. Sh., planted.
S. chinensis, Maxim. Klg.
S. japonica, L., var. Fortunei, Rehd. Klg.(2).
S. prunifolia, Sieb. & Zucc. Sh., planted.
S. trilobata, L. Ksh., in the hills in rocks, 18 in. high.
Stephanandra
S. chinensis, Hance. Klg. Chk.

LEGUMINOSAE

Albizzia
A. Julibrissin, Durazz. Chk., small tree in a garden.
A. Lebbek, Benth. Klg. Chk.(2); common on the hills; flowers sometimes reddish, sometimes whitish.
Arachis
A. hypogaea, L. Sh., cult.
Astragalus
A. sinicus, L. Sh.(3), in lawns. Soochow, Prov. Kiangsu, purchased of a Chinese who was taking a quantity home for eating; called Yang-ts'ai.
Cercis
C. chinensis, Bunge. Sh., planted.
Dalbergia
D. hupeana, Hance. Sh., planted. Chk.(2). Ksh.(2).
Erythrina
E. Corallodendron, L. Sh., planted.
Gleditsia
G. sinensis, Lam. Sh.(3), planted. Ksh., in the hills.
G. triacanthos, L. Sh.(2), planted as a street tree.
Glycine
G. Soja, Sieb. & Zucc. Sh., cult.; also grown at Ithaca(3) from seeds obtained in market in China.
Indigofera (determined by Wm. G. Craib, Royal Botanic Gardens, Edinburgh).
I. Carlesii, Craib. Chk.(2). Ksh.(2).
I. pseudotinctoria, Mats. Chk., an attractive shrub. Also near Hsuchoufu (J. Lossing Buck).
Lespedeza
L. Buergeri, Miq. Klg.(2). Chk.(2). I refer my plants, as others refer their Chinese material, to the Japanese *L. Buergeri*, but the Chinese plant seems to me to be different. At first I gave it a new name, but in the absence of a greater range of material I make a provisional disposition. The Chinese plant seems to differ in its apparently thinner leaves, the leaflets acuminate and with a very distinct small cusp; needs study in connection with *L. Friebeana*, Schindler.
L. Davidii, Franch. Klg., large strong bush.
†L. (Campylotropis) distincta, sp. nov. Herbacea, erecta; caules teretes, striati, fulvo-pubescentes: folia supra opace viridia, glabra, subtus manifeste transverse nervosa, dense sericeo-pubescentia, integra; petioli 3 cm. longi, pilosa-pubescentes; stipulae minutae, lanceolatae; foliola 3, similia, ovalia 4–5 cm. longa et 2.5–3 cm. lata, costa subtus manifeste elevata et fusco-pubescente, basi apiceque rotundata, minute cuspidata; petiolulus folioli terminalis circiter 1 cm. longus, ei lateralium multo breviores: flores violacei, 1 cm. longi, in racemis axillaribus ramosis pedunculatis; pedicelli graciles, sub anthesi circiter 5–6 cm. longi; bracteae minutae, 1–3 mm. longae, lineares, siccae, caducae; calyx pubescens, ad medium fissus, lobis linearibus acuminatis; corolla calycem duplo vel ultra superans; vexillum alas et carinam aequans, obovatum, abrupte acuminulatum, medio utrinque maculis diagonalibus notatum, alas et carinam obtegens; alae obtusae; carina magna, conspicua, abrupte sursum curvata, acuminata; ovarium margine pilosum; fructus ignotus. Fig. 7.
Chi-kung-shan, June 30. The foliage is much like that of *L. tomentosa*, Sieb. The absence of persistent bracts subtending the pedicels separates it from *L. fulva*, Schindler. The prominent sharp-pointed keel seems to be a mark of this species.

†L. (Eulespedeza) Stottsae, sp. nov. Frutex humilis ramosus; caules graciles, juniores pilosi, vetustiores glabri, lenticellati, teretes, intense brunnei: folia parva, subtus manifeste nervosa et transverse venosa, supra intense viridia et minute pubescentia, subtus pallidiora et dense sericeo-pubescentia, integra; petioli graciles, circiter 1 cm. longi, pilosi; stipulae minutae, lineares: foliola 3, lateralia fere sessilia, terminale petiolulo circiter 5 mm. longo insidens, omnia ovalia, distincte cuspidata, terminale 2.5–3.5 cm. longum et circiter 1.5 cm. latum, lateralia 1.5–2.5 cm. longa: flores violacei, 7–10 mm. longi, sessiles, in racemis axillaribus breviter pedunculatis simplicibus quam folia brevioribus; bracteae minutae, subulatae; calyx pilosus, ad medium vel ultra fissus, lobis linearibus subulatis; corolla calycem minime duplo superans; vexillum alas et carinam aequans, oblongo-obovatum, obtusum, planum; alae oblongae, obtusae; carina obtusa; ovarium villosum: fructus non visus. Fig. 8.

Chi-kung-shan; an attractive bush 2 to 3 ft. high, lacking the panicled racemes of the *L. formosa* (*L. Sieboldii*) allies. Named for Louise M. Stotts (now Mrs. Colby), formerly of Chi-kung-shan.

L. ——. Klg., a small bush, the specimens not yet in flower; probably new.

Maackia

†M. honanensis, sp. nov. Frutex altus; ramuli juniores et petioli piloso-pubescentes: folia petiolo incluso 10–14 cm. longa et fere ac lata; foliola 5, integra, subtus ad costam et venas leviter pubescentia, terminale ovale, breviter acuminata, 6–7 cm. longum, petiolulo 1.5–2 cm. longo suffultum, lateralia sessilia, ovali-oblonga, leviter acuminata, angustiora: flores pauci in racemo subterminali brevi; calyx obsolete 5-dentatus; petala non visa: legumen (nondum perfecte maturum) 4–6 cm. longum et 5–9 mm. latum, minute pubescens v. pilosum, margine utrinque incrassatum, ventrali anguste alatum, rostratum, basi in stipitem calyce paullo longiorem attenuatum; pedicellus circiter 1 cm. longus. Fig. 9.

Chi-kung-shan, June 30. On a stream bank amongst shrubbery. Although past bloom, I think it safe to describe this plant, as it is so distinct from all other Maackias (to which genus it evidently belongs) in its few leaflets (only 2 pairs) and the terminal one very broad, particularly as it has been submitted (with the other new Leguminosae) to a specialist in the oriental groups of the family.

M. hupehensis, Takeda. Klg., perhaps planted.

Medicago

M. hispida, Gaertn. (*M. denticulata*, Willd.) Sh., in open field, as a weed; also cult. for food (2) by Chinese; also taken in market at Shanghai and Soochow, and dug from lawn at University of Nanking by women who use it as food.

M. minima, L. Ksh., in hard fields.

M. sativa, L. Chk., one clump by a house.

Melilotus

M. officinalis, L. Sh., adventive.

Phaseolus

Grown at Ithaca in several forms from seeds obtained in the market in Shanghai; these dry market beans were said to have come from Japan, and they bore Japanese names. I did not obtain botanical specimens of Phaseolus in China, although it is grown. The species I have grown are *P. angularis*, Willd., and *P. vulgaris*, L., var. *nanus*, Aschers.

Pisum

P. sativum, L. Grown at Ithaca from Chinese seeds; pods small; seeds smooth (See Bailey, Recent Chinese Vegetables, Cornell Bull. 67, p. 196 and fig. 1894).

Pueraria

P. hirsuta, Schneid. (*Dolichos japonicus*, Hort.) Chk.(3), common, making long cord-like stems.

Robinia

R. Pseudacacia, L. Sh. Chk. Planted.

Sophora

S. flavescens, Ait. Chk. Ksh.

S. japonica, L. Ksh., probably planted.

Trifolium

T. pratense, L. Klg., fls. blue! Chk. Apparently introduced.

T. repens, L. Sh., run wild. Chk., said to have been introduced by missionaries.

Vicia

V. Faba, L. Sh.(3), much cult. by Chinese.

V. hirsuta, Koch. Chk.

†V. (Cracca) kioshanica, sp. nov. Humilis herbacea, basi sublignosa, ramis erectis, caulibus angulatis glabris vel sparse pilosis: folia 4–7-foliolata, petiolo brevi vel nullo, rachi in mucronem vel in cirrhum excurrente, petiolulis brevissimis pilosis ceterum glabra; stipulae minutae, subulatae; foliola alterna vel 2 summa opposita, oblonga,

FIG, 13. LYSIMACHIA CHIKUNGENSIS.

UNIV. OF MICH.

FIG. 14. SALVIA HONANIA.

integra, 2–2.5 cm. longa et 0.5–1 cm. lata, obtusa et breviter cuspidata, venis parallelis numerosis instructa: flores purpurei, parvi, 5–6 mm. longi, graciliter breviterque pedicellati, 4–12 in racemo axillari laxo; bracteae florales minutae vel nullae; calyx 2–3 mm. longus, leviter pilosus, triente superiore in dentes acutos diviso; vexillum carina longius et eam includens, sub anthesi medio sursum curvatum et erectum; corolla tota extra calycem sursum curvata, stylus in carina inclusus, sub angulo recto sursum curvatus, apice stigmatico undique pilosulo; legumen (immaturum) glaber, rostratum. Fig. 10.

Kioshan, July 20. Characterized by the very small few flowers, bent upward at the middle.

†V. kulingana, sp. nov. Facies *V. unijugae*, A. Br., sed foliis bijugis, inflorescentia brevi et fere sessili, bracteis magnis dentatis distat.

Herba erecta, ramosa, 7–8 dm. alta, cirrhis destituta, caule angulato striato glabro: folia impari-pinnata, bijuga; petioli 0.5–1 cm. longi; stipulae magnae, 1–1.5 cm. longae, ovato-auriculatae, integrae vel angulatae; stipellae nullae; foliola (4) lanceolata, acuminata, vel in ramis terminalibus ovalia, integra, sessilia vel fere sessilia, in axibus primariis 5–7 cm. longa et .75–2 cm. lata, longe et acutissime acuminata, utrinque glabra et laevia: flores purpurei, 1–1.7 cm. longi, in racemis axillaribus subsessilibus brevibus glabris, breviter pedicellati; bracteae florales 3–5 mm. longae, virides, ovatae, minute serrulatae et ciliatae, pleraeque apice dentatae vel fere 3-lobatae, pedicellos aequantes vel superantes; calyx brevis, 4–5 mm. longus, dentibus acutis brevibus; corolla valde exserta; petalis omnibus subaequilongis; vexillum obtusum, apice utrinque leviter emarginatum; ovarium glabrum; stylus apice undique pilosulus: fructus ignotus. Fig. 11.

Kuling, July 20; a handsome plant. Wilson's No. 1619 from Kuling is the same, distributed as *V. unijuga* var. *bracteata*, Franch. & Sav.

V. tetrasperma, Moench. Sh.

Vigna

V. sesquipedalis, Fruw. (*Dolichos sesquipedalis*, L. *Vigna sinensis* var. *sesquipedalis*, Koern.) Grown at Ithaca from seeds from South China.

Wisteria

W. floribunda, DC., var. alba, Rehd. & Wils. Sh., planted.

W. sinensis, Sweet. Sh., planted; fls. purple.

GERANIACEAE

Geranium

G. nepalense, Sweet. Klg.

Pelargonium

P. graveolens, L'Her.

P. odoratissimum, Ait.

P. peltatum, Ait.

All cult. at Sh.

OXALIDACEAE

Oxalis (determined by Wm. Trelease, Univ. of Illinois).

O. corniculata, L. Sh.(3) in lawn; lvs. sometimes bronze-green. Kiukiang, Prov. Kiangsi. Near Chk., in paddy field.

O. Martiana, Zucc. Sh., in lawn.

RUTACEAE

Boenninghausenia

B. albiflora, Reichb. Klg.

Evodia

E. glauca, Miq. Klg., tall shrub.

E. rutaecarpa, Benth.? Klg., shrub.

Poncirus

P. trifoliata, Raf. (*Citrus trifoliata*, L. *Pseudaegle trifoliata*, Makino). Sh., planted or semi-spontaneous. Chk., comprising a "privet" hedge, said to have been transplanted from the wild. Ksh., in the hill country, as if native but perhaps introduced.

Zanthoxylum

Z. alatum, Roxb., var. planispinum, Rehd. & Wils. Chk.

Z. schinifolium, Sieb. & Zucc. Chk.(2).

Z. setosum, Hemsl. Ksh.

SIMARUBACEAE

Ailanthus

A. altissima, Swingle (*A. glandulosa*, Desf.) Sh., planted. Chk.(2), apparently native and also planted. Ksh., planted.

MELIACEAE

Cedrela

C. sinensis, Juss. Hankow, tall shaggy-barked planted tree, in flower.

Melia

M. Azederach, L. Sh.(2) planted; called "Indian lilac."

POLYGALACEAE

Polygala

P. sibirica, L. Chk.

EUPHORBIACEAE

Acalypha

A. cardiophylla, Merr.? Planted in Hankow; many slender stems from the crown, and no trunk.

Aleurites

A. Fordii, Hemsl. Hankow, planted. Chk.(2), one specimen from trees probably planted, another from the wild as if native.

Bischofia

B. javanica, Blume (*B. trifoliata*, Hook.) Sh. (4), street and park tree.

Euphorbia (determined by J. B. S. Norton, College Park, Md.)

E. Bodinieri, Lév. & Van. Chk.

E. Helioscopia, L. Chk.(5), a common field weed. Chk.

E. pekinensis, Rupr. Ksh.

E. sinensis, Jesson & Turrill. Klg. Wilson's No. 1573, from Kiukiang, is the same. At first named a new species, but apparently belongs with *E. sinensis*.

Glochidion

G. puberum, Hutch. Chk.(2). Ksh., in the hill country. All specimens represent a glabrescent form. More than one species may be involved in the forms now comprised under this species.

G. Wilsonii, Hutch. Klg.

Mallotus

M. apelta, Muell. Arg. Klg.(2). Chk.

Phyllanthus

P. flexuosus, Muell. Arg. Klg.

Sapium

S. japonicum, Pax & Hoffm. Klg.(2).

S. sebiferum, Roxb. (*Stillingia sebifera*, Michx.) Sh.(3), planted. Hankow, planted. Chk., in the wild.

Securinega

S. fluggeoides, Muell. Arg. Chk. Ksh.(2).

BUXACEAE

Buxus

B. microphylla, Sieb. & Zucc., var. sinica, Rehd. & Wils. Sh.(3), planted. Klg., attractive little bush in the wild.

ANACARDIACEAE

Pistacia

P. chinensis, Bunge. Chk. Ksh.

Rhus

R. javanica, L. Klg. Chk.

R. trichocarpa, Miq. Klg.

AQUIFOLIACEAE

Ilex

I. cornuta, Lindl. Sh.(2), planted; lvs. markedly polymorphous. Kiukiang, Prov. Kiangsi.

CELASTRACEAE

Evonymus

E. alata, Regel. Chk.(2).
E. Bungeana, Maxim. Sh., planted, erect. Ksh., tree, trunk 1 ft. or more diam.; lvs. said to be used for making a black dye.
E. Bungeana var. semipersistens, Rehd.? Sh.(2), planted tree, 30 ft.
E. elegantissima, Loes. & Rehd. Hankow, planted; attractive tree-like bush.
E. grandiflora, Wahl. Chk.(2), stout bush, 10 ft. Another collection Chk. probably the same.
E. japonica, L. Sh., planted, in the variegated form.
E. patens, Rehd. Sh.(2), probably planted; tall climber on trees.
E. radicans, Sieb., var. acuta, Rehd. Klg., in the wild.
E. ——. Allied to E. patens. Ksh.

STAPHYLEACEAE

Euscaphis

E. japonica, Dipp. Klg.(2).

Staphylea

S. Bumalda, DC. Chk.(2).

ACERACEAE

Acer

A. Davidii, Franch. Klg.
A. Ginnala, Maxim. Chk.
A. japonicum, Thunb. Sh.(2), planted.
A. palmatum, Thunb. (A. *polymorphum*, Sieb. & Zucc.). Sh.(7), planted. Klg.(2), in the wild. Chk., wild.
A. pictum, Thunb., var. parviflorum, Schneider. Chk.
A. trifidum, Hook & Arn. Hankow, planted.
A. ——. Allied to *A. Grosseri*, Pax. Chk.(2), once taken in the wild and once from a tree transplanted from the wild: in foliage only.

HIPPOCASTANACEAE

Æsculus

A. Hippocastanum, L. Sh., one tree seen, but not thriving although in bloom; cult.

SABIACEAE

Meliosma

M. pendens, Rehd. & Wils. Klg.(2).

BALSAMINACEAE

Impatiens

I. ——. Klg. Apparently allied to *I. furcillata*, Hemsl.

RHAMNACEAE

Berchemia (determined by Camillo Schneider).

B. floribunda, Brong., var. megalophylla, Schneid. Chk.(2).
B. kulingensis, Schneid. Klg.(3).
B. ——. Chk.(2). A strong vine-like bush with very attractive red fruits. Dr. Schneider comments as follows: "This form seems to be somewhat intermediate between the Japanese *B. racemosa* and the Chinese *B. Giraldiana*. According to the almost wanting papillae of the under surface of the lvs., it seems to be more closely related to *B. racemosa*." The specimens are in fruit; flowers are needed.

Hovenia

H. dulcis, Thunb. Klg.

Rhamnella

R. obovalis, Schneid. Sh.(2), planted or spontaneous. Chk., glabrescent form.

Rhamnus

R. chlorophorus, Decne? Chk., compact bush, 3–4 ft.
R. crenatus, Sieb. & Zucc. Klg.(3). Another collection at Klg., a variety of this species apparently, but similar to *R. oreigenes*, Hance.
R. globosus, Bunge. Sh.(2), planted.
R. rugulosus, Hemsl. Chk.(3). Ksh., form with broad lvs.
R. Wilsonii, Schneid. Klg.

Zizyphus

Z. sativa, Gaertn. Chk.(2). Ksh., planted from the wild.

VITACEAE

Ampelopsis (determined by Alfred Rehder)

A. brevipedunculata, Koehne (*A. heterophylla*, Sieb. & Zucc., var. *amurensis*, Planch.). Sh., perhaps originally planted.

†A. brevipedunculata var. kulingensis, Rehd., var. nov. A typo recedit ramulis glabris, foliis basi truncatis vel late subcordatis, caudato-acuminatis, supra medium utrinque lobo triangulari brevi caudato-acuminato instructis, remote sinuato-dentatis vel denticulatis denticulis saepe fere ad mucronem reductis glabris vel subtus ad nervos venulasque breviter sparse pilosis, inflorescentia velutina, pedunculo quam petiolus breviore.—Folia 6–14 cm. longa et 4–10 cm. lata; petiolus 2–4.5 cm. longus; pedunculus 1–2 cm. longus.—Kuling, thickets, abundant, alt. 4000 ft. July 28, 1907, E. H. Wilson No. 1703, type); same locality alt. 2500–3500 ft. July 7, 1917, L. H. Bailey.

This variety seems nearer to typical *A. brevipedunculata* than any of the other varieties and forms of this species, but it is easily distinguished by the glabrous branchlets and the glabrous or nearly glabrous tricaudate leaves truncate or slightly subcordate at the base and remotely and sinuately denticulate. In 1913 (in Sargent, Pl. Wilson. ii. 580) I had already spoken of this form which was referred by Gagnepain to *A. heterophylla* var. *amurensis*; Planch., as representing possibly a new variety.

Ampelopsis brevipedunculata (Maxim.) Koehne, is the correct name for the species generally known as *A. heterophylla*, Sieb. & Zucc., for that name can not stand on account of the older *A. heterophylla*, Bl., which is the valid name under Ampelopsis of *Parthenocissus heterophylla*, (Bl.) Merrill (*Vitis Landuk*, Miq., *Landukia Landuk*, Planch., *Parthenocissus Landuk*, Gagn.) The type of *A. brevipedunculata* is the plant usually called *A. heterophylla* var. *amurensis*, Planch., while typical *A. heterophylla*, Sieb. & Zucc., not Bl., becomes *A. brevipedunculata* var. *Maximowiczii*, Rehd., n. tr. (*Vitis heterophylla* β *Maximowiczii*, Regel in Gartenfl. xxii. 179, t. 765, fig. 2 [1873]. An enumeration of all the varieties and forms of *A. brevipedunculata* with full synonymy will be published later in the Journal of the Arnold Arboretum.—*Alfred Rehder.*

†A. brevipedunculata var. Maximowiczii, Rehd. n. tr. (*A. heterophylla*, Sieb. & Zucc. *Vitis heterophylla* var. *Maximowiczii*, Regel). Sh. Chk. Klg., forma.

A. micans, Rehd. Chk.

A. serjaniaefolia, Bunge. Chk.(2).

Columella

C. tenuifolia, Merr. (*Cayratia tenuifolia*, Gagn.). Sh.(6). Klg.(2). Chk.(3). Perhaps more than one species is involved in this common columella or cayratia.

Parthenocissus

P. heterophylla, Merrill (*P. Landuk*, Gagn. *Ampelopsis heterophylla*, Blume). Klg.(3).

P. laetevirens, Rehd. Chk. Ksh.

P. Thomsonii, Planch. Klg.

P. tricuspidata, Planch. Sh., native or naturalized. Chk.(2), abundant in the wild.

Vitis

V. (Spinovitis) Davidii, Foëx. Klg.(3).

V. flexuosa, Thunb. Klg. Chk.

V. flexuosa var. parvifolia, Gagn. Chk.(2).

†V. pentagona, Diels & Gilg, var. honanensis, Rehder, var. nov. A typo recedit foliis plus minusve trilobatis, lobis plerumque brevibus ovatis vel late triangularibus, vel interdum oblongo-ovatis et sinu profundo rotundato separatis.—Chi-kung-shan, June 13 and 18, 1917, L. H. Bailey (type); Yung-ning, Tsiliping, May 22, 1919, Joseph Hers (Nos. 441, 460); Hwei Hsien, Ta fu tze, June 16, 1919, Joseph Hers (No. 785); Fu niu shan October 6, 1919, Joseph Hers (No. 157).

I would have considered the specimens with lobed leaves as representing only a slight form if all specimens from Honan collected in four different localities did not show more or less lobed leaves, while the numerous specimens in the herbarium of the Arnold Arboretum from Hupeh and Yunnan, including one from Kiangsi, have leaves of regular ovate-oblong or somewhat angular outline and only occasionally show a slight tendency toward lobing. The specimens of this variety extend the range of the species considerably to the north and this fact seems to indicate that this variety represents a geographical race. The most remarkable of the specimens is Hers' No. 460 which has the leaves divided more than half way to the middle and the lobes separated by wide round sinuses.—*Alfred Rehder.*

V. reticulata, Pamp. Chk.(2).

V. vinifera, L. Hankow, in yards.

TILIACEAE

Grewia

G. parviflora, Bunge. Klg. Chk.(5). Ksh.(2).

Tilia

T. Henryi, Szysz. Klg.

T. Tuan, Szysz., var. Klg. Differs from the typical form in leaves more sharply serrate and less pubescent beneath; small trees in a clump, in fruit.

MALVACEAE

Abutilon

A. Theophrasti, Medic. (*A. Avicennae*, Gaertn.). Hankow, weed. Ksh.(2), along roadside, and also cult. as "Ma" for fiber.

Gossypium

G. herbaceum, L. Sh., cult.

Hibiscus

Two apparently undescribed species of Hibiscus were taken, and they have been tentatively named, described and illustrated; but further material is awaited.

Malva

M. rotundifolia, L. Ksh.(2).

M. sylvestris, L., var. mauritiana, Boiss. (*M. mauritiana*, L.). Sh., cult. It is difficult to draw clear distinctions between this plant, as it exists in cult., and *M. sylvestris*. Boissier's diagnosis (Fl. Orient. 1,819) may be taken as standard: "Glabrescens, folia teneriora obtusius lobata, flore viridius purpurei minus profunde emarginati." The plant is more upstanding, as I know it, than *M. sylvestris*. My Chinese collection was from plants standing 4 ft. tall; the stems and petioles are more or less strigose-hairy, as also to some extent are plants I have grown from commercial seeds.

STERCULIACEAE

Firmiana

F. simplex, Wight (*Sterculia platanifolia*, L. f.). Sh.(3), planted. Hankow, street tree. Ksh., temple grounds. The Wu-tung tree, much planted.

DILLENIACEAE

Actinidia

A. chinensis, Planch. Chk.(3). The Iang-tao, much prized for its fruit, collected in the wild. Three other collections of actinidia at Chk., in foliage only, cannot be identified positively.

TERNSTROEMIACEAE

Camellia

C. japonica, L. Sh.(2), planted.

C. oleifera, Abel. Klg., native.

Eurya

E. japonica, Thunb., var. nitida, Dyer. Klg.

Stewartia

S. sinensis, Rehd. & Wils. Klg.

Ternstroemia

T. japonica, Thunb. Klg.

HYPERICACEAE

Hypericum

H. Ascyron, L. Chk.(2).

H. attenuatum, Choisy. Klg.(3). Chk. Ksh.

H. chinense, L. Sh.(2), planted. Hankow, planted. Klg.(2), common in the wild, and handsome.

H. japonicum, Thunb. Kiukiang, Prov. Kiangsi.

VIOLACEAE

Viola

With the exception of the very few collections at Shanghai, these violas are past flower, being in fruit. For this reason and because of the critical nature of the genus, I cannot attempt close determinations. The best I can do is to make a few rough notes. Other specimens I have not attempted to place.

V. diffusa, Ging. Chk., in cleft of rock.

V. hirta, L., sens. lat. Chk.; fruit globular, purple. Ksh. in the hills. The Chinese plant formerly referred to this species is now apparently separated (See Becker, Beih. Bot. Centralb. xxxvi, 2, p. 23)
V. japonica, Langsd. Sh., in a lawn.
V. micrantha, Turcz.? Klg.(3). Chk.(2). This is the plant apparently that has been referred to *V. canina*, but which I suppose to be *V. micrantha* (*V. acuminata*, Ledeb.) as characterized by Becker in Beih. Bot. Centralb. xxxiv, 2, p. 380, although my plants have stems somewhat pubescent to the base rather than "glabri vel versus apicem pubescentes."
V. Patrinii, DC. Sh.(2), in lawns.
V. pinnata, L.? Klg.(2), in crevices of rocks. This Chinese plant is commonly referred to *V. pinnata*, but the foliage is really very different.
V. tricolor, L. Sh., cult.
V. verecunda, Gray. Chk.(2).

STACHYURACEAE

Stachyurus
S. chinensis, Franch. Klg.(2).

THYMELAEACEAE

Daphne
D. Genkwa, Sieb. & Zucc. Chk.(3).
Edgeworthia
E. papyrifera, Zucc. (*E. chrysantha*, Lindl.) Sh.(2), planted. Klg., in a yard, probably native.

ELAEAGNACEAE

Elaeagnus
E. multiflora, Thunb. Chk.
E. pungens, Thunb. Sh., planted. Klg.
E. umbellata, Thunb. Chk.(5); berries said to be eaten by Chinese.
E. ——. Allied to E. pungens. Chk.

LYTHRACEAE

Lagerstroemia
L. indica, L. Sh., planted.

PUNICACEAE

Punica
P. Granatum, L. Sh.(2), planted, single-flowered and double-flowered forms.

NYSSACEAE

Camptotheca
C. acuminata, Decne. Klg., tall shrub.
Nyssa
N. sinensis, Oliv. Klg., tree 25 ft.

ALANGIACEAE

Alangium
A. chinense, Rehd. Hankow (2), apparently planted. Chk., in the wild.

ONAGRACEAE

Clarkia
C. pulchella, Pursh. Hankow, cult.
Epilobium
E. roseum, Schreb., sens. lat. Klg.
Œnothera
Œ. Lamarckiana, Hort. Klg., as if introduced. Chk. (2), well established and spreading, said to be from seed brought from America.
Trapa
T. natans, L. Kiukiang, Prov. Kiangsi (2); 4-horned. (For an arrangement of the trapas, see Makino, Obs. Fl. Jap. viii, 59, from Bot. Mag. Tokyo, 1908)

HALORAGIDACEAE

Haloragis
H. micrantha, R. Br. Klg.
Myriophyllum
M. spicatum, L. Kiukiang, Prov. Kiangsi.

ARALIACEAE

Acanthopanax
A. evodiaefolium, Franch. Klg.
A. ricinifolium, Seem., var. Maximowiczii, Schneid. Sh.(5), from one planted fruiting tree on the grounds of St. John's University.
A. spinosum, Miq. Klg.
Aralia
A. chinensis, L., var. glabrescens, Schneid. Chk.
A. cordata, Thunb. Specimens from shoots sold in Shanghai market as "Woo-do," said to have been imported from Japan. This is the udo, now somewhat grown in America for its edible spring shoots.
Hedera
H. helix, L. Sh.(2), spontaneous and established.
H. himalaica, Tobl. Klg.(2).

UMBELLIFERAE

Apium
A. graveolens, L., var. dulce, DC. Sh.(3); celery plants from the market in their culinary stage, the flowering plant as grown by the Chinese, and the flowering plant grown by myself in Sh. from roots taken in the market; called Yah-jung. The plant is much less developed in size and succulence than the celery of Europe and America. Also grown at Ithaca from Chinese seed. Two other umbelliferous plants are used like celery by the Chinese in Shanghai, but I did not succeed in getting them in fl. or fr., and so do not know what they are.
Coelopleurum
C. ——. Klg.
Cryptotaenia
C. canadensis, DC. Chk.
Coriandrum
C. sativum, L. Sh., cult. by Chinese. Grown at Ithaca from Chinese seed.
Daucus
D. Carota, L. Sh. Ksh. Weed, often markedly hispid-hirsute.
Var. sativa, DC., carrot grown at Ithaca from seeds from China and Japan.
Foeniculum
F. vulgare, Hill. Sh., cult. Ksh., apparently escaped.
Hydrocotyle
H. rotundifolia, Roxb. Sh. Kiukiang, Prov. Kiangsi.
Œnanthe
Œ. linearis, Wall., forma. Kiukiang, Prov. Kiangsi.
Œ. stolonifera, DC.? Chk.
Pastinaca
P. sativa, L. Sh.(4), Sold in markets (as Jung-ts'ai-lau-bo), and grown by me at Shanghai from market roots.
Sanicula
S. europaea, L., sens. lat. Sh. Klg. Chk.(2).
Selinum
S. Monnieri, L. Sh.
Torilis
T. Anthriscus, Bernh. Sh.(3). Chk.(3). Variable, but I have not been able to find good characters of separation.
——.? Two collections of an umbellifer in the hill country back of Ksh. have not been determined; near Peucedanum.

CORNACEAE

Aucuba
A. japonica, Thunb. Sh., cult.
Cornus
C. controversa, Hemsl. Klg.; very large stout shrub; sprays nearly horizontal.
C. Kousa, Buerg. Klg. Chk.
C. Walteri, Wang. Ksh.

Helwingia

H. japonica, Dietr. Klg.

ERICACEAE

Rhododendron

R. Fortuni, Lindl. Klg., perhaps planted.
R. (Azalea) Mariesii, Hemsl. & Wils. Klg.
R. (Azalea) Simsii, Planch. Klg.(2). Chk.(3).

Vaccinium

V. bracteatum, Thunb. Klg.(2). Young growth red.

MYRSINACEAE

Ardisia

A. japonica, Blume. Klg. Has the look of a small creeping gaultheria.

PRIMULACEAE

Androsace

A. saxifragaefolia, Bunge. Sh.(2), weed in lawn.

Lysimachia

†L. argentata, sp. nov. Ex affinitate *L. cephalanthae*, Knuth, sed habitu erecto rigido et indumento denso argenteo-cinereo differt. Folia magis abrupte in petiolum alatum longum attenuata, nervorum paribus 2–3 supra subtusque prominentibus: flores minores, omnes distincte pedicellati, in fasciculis terminalibus et pedunculatis axillaribus, fasciculus axem primariam terminans quam aliis minus compactus; lobi calycis longissimi et conspicui, pilis vix vel leviter articulatis.

Herba rigida erecta, circiter 4 dm. alta, indumento adpresso denso: folia ovata vel rhombico-ovata, vel infima fere spathulata, abrupte in petiolum alatum brevem vel longum attenuata, lamina 1.5–3 cm. lata et petiolo incluso 4–6 cm. longa, integra, acuta vel fere obtusa: flores pauci in fasciculis axem primarium et ramulos axillares breves terminantibus non involucratis, sed bracteis petiolatis suffultis; pedicelli 4–5 mm. longi et saepe patentes vel curvati; calyx 6–7 mm. longus, ad basin partitus lobis linearisubulatis et longe pilosis; corolla (lutea?) calycem paullo superans, profunde partita, lobis 5 acutis; stamina inclusa, filamentis dilatatis basi connatis, basi corollae insertis, antheris dorsifixis: capsula globosa, basi angulata, apice pubescens. Fig. 12.

Chi-kung-shan, June 18. It bears considerable resemblance to *L. Henryi*, Hemsl., from which it is distinguished also by the characters that separate it from *L. cephalantha*.

L. candida, Lindl. Sh., weed in lawns. Chk., in paddy field, form with small lvs. and fls.

†L. chikungensis, sp. nov. Similis *L. Fortunei*, Maxim. sed gracilior et caule rachique puberulis. Folia tenuiora, multo angustiora, basi longe attenuata, margine (saltem in sicco) revoluta et cartilaginea; racemi graciles; pedicelli brevissimi; corolla ad medium fissa.

Herba graciliis erecta, ramosa, 5–8 dm. alta; caulis brunnescens, teres, puberulentus: folia sparsa, anguste lanceolata vel fere lineari-lanceolata, basi sensim in petiolum brevem attenuata, petiolo incluso 4–6 cm. longa et 5–7 mm. lata, margine integra et revoluta (saltem in sicco), acuta, glabra, subtus papillosa: flores albescentes, parvi, 2–3 mm. longi, pedicellos graciles aequantes vel superantes, in racemis terminalibus elongatis gracilibus; bracteae subulatae, pedicellos aequantes vel superantes; calyx circiter corolla dimidiam aequans, fere ad basin in lobos 5 obtusos hyalino-marginatos intus maculatos fissus; corolla dimidia in lobos late deltoideos acutos vel muticos divisa; stamina 5, brevia, lobis oppositis, basi annulo elevato e basi corollae prosiliente conjuncta; antherae erectae, cordatae, acutae, filamenta paullo superantes; stylus brevis, rectus, filamenta circiter aequans, stigmate terminali. Fig. 13.

Chi-kung-shan, June 15 and 30, frequent. Perhaps an outlying form of the plants referred to *L. Fortunei*, but if so needing separation in order to define that species. In *L. Fortunei* the leaves are oblong to elliptic-lanceolate to ovate, apparently mostly elliptic-ovate.

L. circaeoides, Hemsl. Chk. Ksh., a form with relatively broader lvs. and not so long-pointed, suggesting *L. stenosepala*, Hemsl., (but calyx-lobes very different), probably to be referred to *L. circaeoides*; specimen in fr.

L. clethroides, Duby. Klg.(2). Chk.

L. japonica, Thunb. Sh.(2), lawn weed. Chk.

L. Klattiana, Hance. Sin-tien, near Chk., foot of mountain.

L. paludicola, Hemsl. Chk.

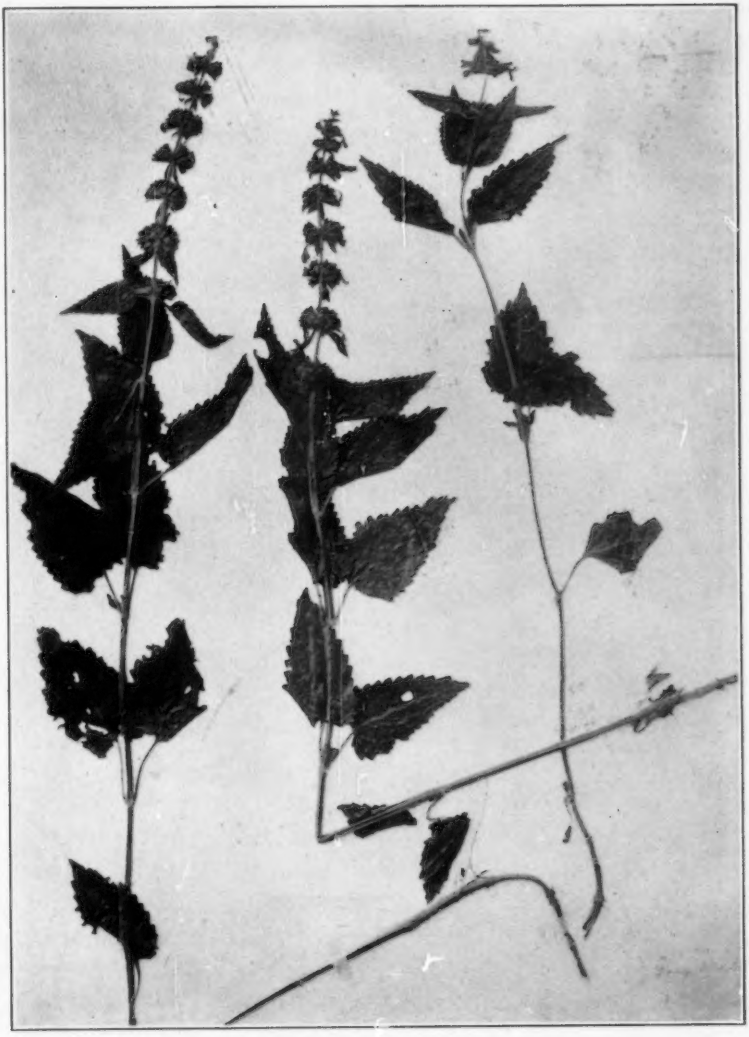

FIG. 15. STACHYS ARRECTA.

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Fig. 16. Atractylis separata.

PLUMBAGINACEAE

Plumbago

P. capensis, Thunb. Hankow, cult.

EBENACEAE

Diospyros

D. Kaki, L. f. Sh.(2). Chk. Planted.

D. Lotus, L. Chk.(3), apparently planted. Ksh., as if wild. (For an arrangement of the varieties of these species, see Makino, Obs. Fl. Jap. fasc. viii, 48 and fasc. xii, 103, from Bot. Mag. Tokyo, 1908 and 1912 respectively).

SYMPLOCACEAE

Symplocos

S. paniculata, Wall. Chk.(3).

STYRACEAE

Pterostyrax

P. corymbosus, Sieb. & Zucc. Klg.

Styrax

S. dasyanthus, Perk.? Klg.(2). Chk.(2).

S. philadelphoides, Perk. Klg.

The Chinese storaxes are difficult to define.

OLEACEAE

Fontanesia

F. Fortunei, Carr. Sh.(4), planted and more or less spontaneous as a hedge or division plant.

Forsythia

F. suspensa, Vahl, var. atrocaulis, Rehd. Chk.(3), common.

F. viridissima, Lindl. Sh.(2), planted.

Fraxinus

F. chinensis, Roxb., var. rhynchophylla, Hemsl. Chk.(3).

Jasminum

J. nudiflorum, Lindl. Sh., planted.

J. officinale, L. Sh., planted.

Ligustrum

L. acutissimum, Koehne. Klg. Chk. Broad-leaved forms.

L. lucidum, Ait. Sh.(2). Hankow. A commonly planted strong upright shrub and small tree, frequent about grave-mounds.

L. Quihoui, Carr. Chk.

L. sinense, Lour. Sh.(2), planted.

Osmanthus

O. Aquifolium, Sieb. Sh.(2), planted; lvs. polymorphous.

LOGANIACEAE

Buddleia

B. Lindleyana, Fort. Sh., planted. Hankow, planted. Klg., in the wild.

GENTIANACEAE

Gentiana

G. squarrosa, Ledeb. Sh.(3), in lawns.

APOCYNACEAE

Trachelospermum

T. gracilipes, Hook. f., var. Cavaleriei, Schneid. Klg. Shoots and lvs. more glabrous than in verified specimens.

T. jasminoides, Lem. Sh., cult. Specimens taken in the wild at Klg. and Chk. (2), probably are this species, but fls. are lacking.

ASCLEPIADACEAE

Cynanchum

C. auriculatum, Royle. Klg. Chk.(3).

C. sibiricum, R. Br. Ksh.

Pycnostelma
P. paniculatum, K. Sch. (*P. chinensis*, Bunge). Chk. Ksh.
Vincetoxicum
V. amplexicaule, Sieb. & Zucc. Klg.(2).

CONVOLVULACEAE

Convolvulus
C. arvensis, L. Chk.
C. acetosaefolius, Turcz. (*Calystegia hederacea*, Wall., not *Convolvulus hederaceus*, L.) Sh.(3).
Ipomoea
I. purpurea, Roth. Klg., spontaneous in yard.
I. reptans, Poir. Sh. cult.; fls. white. Wuchang, escaped at edge of garden. Hankow, in market. Grown for food by the Chinese, the young shoots being eaten.
Quamoclit
Q. pinnata, Bojer (*Ipomoea Quamoclit*, L.) Sh., cult.

BORAGINACEAE

Anchusa
A. italica, Retz. Sh., cult.
Bothriospermum
B. tenellum, Fisch. & Mey. Sh. Ksh.(2).
Ehretia
E. macrophylla, Wall. Hankow, planted.
Heliotropium
H. peruvianum, L. Sh., cult.
Lithospermum
L. erythrorhizon, Sieb. & Zucc. Chk.(2). Root red, used for dye.
Myosotis
M. scorpioides, L. Chk., introduced in a garden, and spreading, apparently established.
Trigonotis
T. peduncularis, Benth. Sh.(3). Ksh.(2).

VERBENACEAE

Callicarpa
C. Giraldiana, Hesse, var. subcanescens, Rehd. Chk.(2). Variable in foliage, but I have not been able to make segregates.
C. japonica, Thunb., var. angustata, Rehd. Klg.
Caryopteris
C. incana, Miq. (*C. Mastacanthus*, Schauer). Ksh.
Clerodendron
C. cyrtophyllum, Turcz. Klg.(2).
C. foetidum, Bunge. Near Kiukiang, Prov. Kiangsi; perhaps planted.
C. trichotomum, Thunb. Sh., spontaneous and apparently established.
Verbena
V. officinalis, L. Hankow, weed. Sin-tien, near Chk., at foot of mountain, along railroad.
Vitex
V. cannabifolia, Sieb. & Zucc. Near Kiukiang, Prov. Kiangsi.
V. Negundo, L. Hankow, planted, tree-like, 15 ft. Chk.(4), wild, different forms.

LABIATAE

(For a key to the Labiatae of China, see S. T. Dunn, Notes Edinb. Bot. Gard. vi: 127.—May, 1915).

Ajuga
A. genevensis, L. Sh. Ksh.
Lamium
L. amplexicaule, L. Sh.
Leonurus
L. sibiricus, L. Sh. Wuchang.
Marrubium
M. incisum, Benth. Ksh.(2).
Mentha
M. citrata, Ehrh.? Sh., in market as "Bo-wu", and grown by me at Shanghai. Chk.(2), as if introduced.

Nepeta

N. Cataria, L. Ksh.

N. hederacea, Trev. (*N. Glechoma*, Benth.). Sh.(2). Ksh.

Origanum

O. vulgare, L. Kiukiang, Prov. Kiangsi Chk. Ksh. The oriental material seems to present points of difference from the European.

Prunella (Brunella)

P. vulgaris, L., var. lanceolata, Fernald. Sh. Chk. Common.

Salvia

S. farinacea, Benth. Sh., cult.

†S. honania, sp. nov. Affinis *S. japonicae*, Thunb. et *S. miltiorhizae*, Bunge, a quibus habitu robustiore et indumento glanduloso differt. Folia magna, simplicia vel 3-foliolata foliolo terminali maximo late ovato, nec longe acuminato: flores magni, forma diversa, staminibus longe exsertis.

Herba erecta, plus minusve ramosa, 4–5 dm. alta, copiose glanduloso-pilosa, caule angulato: folia numerosa, simplicia vel 3-foliolata, utrinque pilosa, margine ciliata et manifeste dentata dentibus obtusis mucronulatis; foliolum terminale petiolulatum, ovatum et plus minusve acuminatum, basi cordatum vel truncato-cordatum, lamina 5–9 cm. longa et 4–8 cm. lata, lateralia parva, sessilia vel subsessilia ovata vel orbiculari-ovata, 2–3.5 cm. longa at 1–2.5 cm. lata, obtusa vel tantum brevissime acuminata; petioli 3–7 cm. longi, glanduloso-pilosi: flores purpurascentes, patentes, in spicis longis terminalibus et axillaribus interruptis, breviter pedicellati, bracteis floralibus inconspicuis; calyx 7–8 mm. longus, manifeste costatus, dimidio vel triente superiore conspicue rubro-purpureus, bilabiatus labio antico acutissime bidentato, postico integro vel fere integro et ciliato; corolla exserta, tubo calycem superante, labiis divergentibus, antico longo emarginato vel fimbriato et medio constricto; stylus et stamina 2 longiora longe exserta, ramo inferiore connectivi in tubo corollae occulto et sterili: nuculae 4, oblongae, leviter compressae, laeves. Fig. 14.

Chi-kung-shan, two collections; frequent. A rather showy species, apparently well marked.

S. japonica, Thunb. Klg.(2). A multifarious species.

S. miltiorhiza, Bunge. Chk.

S. plebeja, R. Br. Sh.(4). Chk.

Satureia (including Calamintha).

S. chinensis, Briq. Klg.(3). Chk.(3).

†S. gracilis, n. tr. (Calamintha gracilis, Benth., DC. Prodr. xii, 233). Sh.(2). Chk.

Scutellaria

S. angulosa, Benth.? Label lost, but probably from Klg.; a showy plant.

S. indica, L. Sh. Klg. Chk.

S. rivularis, Wall. (*S. barbata*, D. Don.?). Ksh.

Stachys

†S. arrecta, sp. nov. A *S. kouyangensi*, Dunn, differt habitu erecto rigido, foliis argute dentatis acutis vel acuminatis, calycis dentibus brevibus latisque, floribus parvis, staminibus inclusis.

Planta erecta rectaque, 2–6 cm. alta, glanduloso-pilosa; caules simplices, rigidi, 4-angulati: folia ovata. lamina 4–4.5 cm. longa et 2.5–3 cm. lata, acuta vel acuminata, basi cordata vel expansa, grosse et satis argute dentata, utrinque pilosa; petioli 1–2 cm. longi, pilosi: flores purpurei, circiter 1 cm. longi, brevissime pedicellati, in verticillis axillaribus sessilibus densis parvis spicam interruptam terminalem formantibus; calyx 5–6 mm. longus, pubescens et pilosus, obsolete nervosus, dentibus aequalibus deltoideis acutis; corolla exserta, tubo gracili curvato; labium anticum 3-lobatum, quam galea integra curvata margine extusque barbata longius; stamina 4, aequalia, antheris oblongis paullo vel vix galeam superantibus; stylus stamina aequans, 2-lobatus: nuculae infra angulatae, apice rotundatae, fuscae, minute asperulae, apiculatae. Fig. 15.

Chi-kung-shan, 2 collections, June 13. *S. kouyangensis* is a much weaker plant with leaves obtuse or mutticous, obtusely crenate-dentate and not long-acuminate; it is a question whether more than one species may not be included under that name.

Teucrium

T. japonicum, Willd. Sh.

SOLANACEAE

Brunfelsia

B. Hopeana, Benth. Sh., cult.

Capsicum

C. annum, L. Grown at Ithaca from Chinese seeds, the long red-pepper type.

Lycium
L. chinense, Mill. Ksh.
Nicotiana
N. Tabacum, L. Grown at Ithaca from Chinese seeds.
Physalis
P. Alkekengi, L. Ksh.
P. minima, L. Wuchang(2).
(For a key to Chinese species of Physalis, see Léveillé, Bull. Soc. Bot. de France, 4 ser. viii, 208).
Schizanthus
S. pinnatus, Ruiz & Pav. Sh., cult.
Solanum
S. nigrum, L. Sh. Chk. Ksh.(2).
S. tuberosum, L. Sh., cult. for foreigners.

SCROPHULARIACEAE

Antirrhinum
A. majus, L. Sh., cult.
Linaria
L. Cymbalaria, Mill. Chk. Introduced, and apparently well established and spreading.
Lindernia
L. Pyxidaria, All. Chk., rice paddy.
Mazus
M. japonicus, Kuntze (*M. rugosus*, Lour.). Sh.(5). Klg. Chk.(2). Ksh. Widely variable.
Melampyrum
M. roseum, Maxim. Klg.(2). Variable, or else more than one species has been confused in the herbarium material.
Mimulus
M. luteus, L. Sh.(2), cult.
Paulownia
P. tomentosa, K. Koch (*P. imperialis*, Sieb. & Zucc.). Sh. Chk.(2). Planted.
Veronica
V. Anagallis-aquatica, L. Sh.
V. longifolia, L., one of the garden forms. Sh., cult.
V. Tournefortii, Gmel. Sh.

BIGNONIACEAE

Campsis
C. chinensis, Voss (*Tecoma grandiflora*, Delaun.) Kiukiang, Prov. Kiangsi, (2), probably native. Hankow, very tall climber on trees, probably planted. Ksh., planted.
Catalpa
C. Duclouxii, Dode. Ksh., planted; 35 ft. high.
C. hybrida, Spaeth. Sh.(2), planted.
C. ovata, Don (*C. Kaempferi*, Sieb. & Zucc.). Chk., in the wild.

PEDALIACEAE

Sesamum
S. indicum, L. Sh., in cotton fields, as if planted. Wuchang, as a weed.

OROBANCHACEAE

Æginetia
Æ. indica, Roxb. Klg.
Orobanche
O. ammophila, C. A. Mey. Chk.

GESNERIACEAE

Boea
B. hygrometrica, R. Br. Chk. Ksh. Handsome blue-flowered scapose little plant growing on rocks.

ACANTHACEAE

Daedalacanthus
D. nervosus, T. Anders. Sh., cult.
Dicliptera
D. japonica, Makino (*D. crinita*, Nees). Klg.(2).

Justicia

†J. quadrifaria, Wall., var. lancifolia, var. nov. A typo praecique recedit foliis angustis, indumento magis griseo-setoso, inflorescentia manifeste sessili. Folia oblongo-lanceolata, 6–8 cm. longa at 2–2.5 cm. lata, integra, in basin semi-amplexicaulem sessilem attenuata: flores albi, fauce purpureo-maculati, sessiles, in fasciculis axillaribus parvis. —Kuling, July 19. Leaves much narrower than the ovate to ovate-lanceolate leaves of *J. quadrifaria*, which also has peduncled inflorescence. Perhaps we should raise the question as to the identity of *J. quadrifaria* in Central China.

PLANTAGINACEAE

Plantago

P. depressa, Willd. Chk. Ksh.(2).
P. lanceolata, L. Chk., in lawn.
P. major, L. Sh.(3). Chk.
P. major var. asiatica, Decne. Chk.

RUBIACEAE

Anotis

A. chrysotricha, Palibin. Klg.(2).

Galium

G. Aparine, L. Sh.(2).
G. gracile, Bunge (*G. rotundum*, Thunb.?). Sh. Chk.(3).
G. verum, L. Ksh.(2).

Gardenia

G. augusta, Merr. (*G. florida*, L.) Sh.(3), planted.

Paederia

P. tomentosa, Blume. Klg. Chk.(4). Variable; perhaps more than one species is passing under this name.

Rubia

R. cordifolia, L. Klg. Ksh., narrow-leaved form.

Serissa

S. serissoides, Druce (*Democritea serissoides*, DC. *Serissa Democritea*, Baill. *Leptodermis nervosa*, Hutch., Pl. Wils. iii, 404). Chk. Ksh.

CAPRIFOLIACEAE

Abelia

†A. Zanderi, Rehd., var. latifolia, Rehd., var. nov. A typo recedit praecipue foliis latioribus ellipticis apice saepe obtusis subtus ad costam nervosque dense villosis; achaeniis majoribus satis dense setoso-pilosis.—Folia elliptica, breviter acuminata vel acutiuscula vel obtusa, basi cuneata, 4–6.5 cm. longa et 2.2–3.5 cm. lata, supra medium utrinque dentibus 1–4 acutis vel obtusis instructa, supra accumbenti-pilosa, subtus ad costam et ad nervos basin versus dense villosa, ceterum pilis sparsis conspersa: inflorescentia biflora, pedunculo 3–4 mm. longo, pedicellis subaequilongis; achaenia circiter 1.3 cm. longa et 2.25 mm. lata, costata, setoso-pilosa; sepala oblongo-elliptica, 1–1.2 longa et 4.5–5 mm. lata.—Chi-kung-shan, June 17, 1917.

This plant is apparently only a variety of *A. Zanderi*, although it looks rather different from the typical form on account of its large and broad often obtusish leaves densely villous on the veins beneath. In the pubescence, shape and size of the leaves it much resembles *A. umbellata*, Rehd., but that species has a 5–7-flowered inflorescence and rather narrower leaves.—*Alfred Rehder.*

Diervilla

D. coraeensis, DC. Sh., planted.
D. japonica, DC., var. sinica, Rehd. Klg., common tall native bush.

Lonicera

L. japonica, Thunb. Sh., planted and more or less spontaneous. Chk., apparently native.
L. Maackii, Maxim., var. podocarpa, Franch. Sh.(2), planted.
L. modesta, Rehd. Klg.
L. Standishii, Carr. Chk., the typical form scarcely known heretofore as a wild plant; a large bush with many cane-like stems.

Sambucus

S. javanica, Blume. Kiukiang, Prov. Kiangsi. Chk.
S. Sieboldiana, Blume. Chk.

Viburnum
V. dilatatum, Thunb. Chk.
V. ichangense, Rehd. Klg.(3).
V. macrocephalum, Fort. Sh.(2), planted.
V. tomentosum, Thunb. Klg. Chk.(2). Strong handsome native bush, with bright red fruits.
V. tomentosum var. plenum, Rehd. Sh., planted.
V. tomentosum var. rotundifolium, Hort. Sh.(2), planted.

VALERIANACEAE

Patrinia
P. scabiosaefolia, Fisch. Klg.
P. villosa, Juss.? Ksh. Plant immature, but probably this species, although the lvs. are more pinnatifid than usual. Possibly one of the forms of *P. heterophylla*, Bunge.

CUCURBITACEAE

Benincasa
B. hispida, Cogn. Grown at Ithaca from Chinese seeds; common in China.
Cucumis
C. Melo, L.
C. sativus, L.
Both grown at Ithaca from seeds from China.
Cucurbita
C. moschata, Duch. Grown at Ithaca from seeds from China and Japan.
Lagenaria
L. leucantha, Rusby (*L. vulgaris*, Ser.). Grown at Ithaca from Chinese and Japanese sources.
Luffa
L. cylindrica, Roem. Wuchang, cult. on arbors near water's edge, with momordica; also grown at Ithaca.
Momordica
M. Charantia, L. Wuchang; cult. on arbors at water's edge.
Thladiantha
T. nudiflora, Hemsl. Klg. Ksh.
Trichosanthes
T. ——. Ksh. Allied to *T. Kirilowii*, Maxim. Marked by the long calyx-lobes, absence of large floral bracts, fls. not in long racemes; lvs. very deeply cut, with strongly ciliate margins; apparently undescribed. The herbarium material passing as *T. Kirilowii* is not clear.
Zehneria? Two specimens in foliage only, taken at Klg.

CAMPANULACEAE

Adenophora
A. verticillata, Fisch. Klg. One of the forms included in this polymorphous species; lvs. in 3's, lowermost alternate. See Makino (Obs. Fl. Jap. fasc. viii, 54–56, from Bot. Mag. Tokyo, 1908), for an arrangement of the many forms of this species. This species is said to yield a thickened root that is eaten in parts of Japan, thus suggesting the behavior of *Campanula Rapunculus*.
Campanula
C. persicifolia, L. Sh.(2), cult.
Codonopsis
C. lanceolata, Forbes & Hemsl. Klg. A curious milky-juiced vine with woody caudex raising to the surface of the ground or above; leaflets rather longer and narrower than in most of the material I have seen, but well within the range of variation of the species.
Lobelia
L. radicans, Thunb. Kiukiang, Prov. Kiangsi. Chk.
Platycodon
P. grandiflorum, A.DC. Klg. In the wild; fls. rich dark blue.

COMPOSITAE

Achillea
A. sibirica, Ledeb. Sh. Hankow. Planted for ornament.
Anaphalis
A. sinica, Hance. Klg.(3).

Arctium

A. Lappa, L. Roots in market Sh., as Toong-yang-lau-bo, said to be a Japanese vegetable; grown by me at Sh. from the market roots. (The Japenese edible [illegible]bo is growing at Ithaca).

Artemisia

A. anomala, S. Moore. Klg.

A japonica, Thunb. Chk.(3). Ksh. This is the *A. japonica* as understood by Hemsley and others, but doubtful whether it is the same as the Japanese plant. It has an open virgate inflorescence and characteristic wide-lobed or even unlobed root lvs.

A. sacrorum, Ledeb., var. viride, Hort.? Sh., cult., 8–10 ft. Ksh., temple yard. Apparently the same as the "summer fir" now rather widely grown in the United States for ornament and tending to escape.

A. scoparia, Waldst. & Kit.? Chk. The same as Henry 3696, from Ichang, referred to this species, but it is not the same as the European *A. scoparia*.

Aster

A. indicus, L. Sh. Kiukiang, Prov. Kiangsi. Chk.

Atractylis

†A. separata, sp. nov. Affinis *A. ovatae*, Thunb.; stricta, caule simplice monocephalo glabro: folia simplicia, nonnulla inferiora plus minusve 3-lobata, elongata, abrupte acuminata vel attenuata.

Perennis, stricte erecta, caulibus simplicibus glabris 6–8 dm. altis: folia alterna, sessilia, basi spinis stipularibus instructa, rigida, indivisa vel nonnulla inferiora 3-lobata, indivisa oblonga, acuminata, 6–8 cm. longa et circiter 2 cm. lata, glaberrima et lucida, utrinque manifeste nervosa, arcte spinoso-serrata, apice spinoso-acuta; capitulum terminale solitarium, foliis angustis suffultum; bracteae involucri exteriores 2.5–3 cm. longae, acutissime pectinato-pinnatifidae, interiores breves, integrae vel tantum minute serratae; flores straminei dicuntur; pappus non copiosus, plumosus. Fig. 16.

Chi-kung-shan, hillside on the Hupeh side of the boundary. The relation of this plant to *A ovata* is to be worked out; that Japanese species can hardly be made to cover all the Chinese forms. Nor am I able to refer my plant to *A. chinensis*, DC., which appears to be *A. ovata*.

Cacalia

C. aconitifolia, Bunge (*Senecio aconitifolius*, Turcz.) Chk.(2).

†C. rubescens, n. tr. (*Senecio rubescens*, S. Moore, Journ. Bot. 1875, p. 228). Klg.

Calendula

C. officinalis, L. Sh., cult.

Carduus

C. crispus, L. Near Hankow, along railroad; apparently introduced.

Centaurea

C. Cyanus, L. Sh. Chk. An escape.

Centipeda

C. minima, A. Br. & Aschers. (*Artemisia minima*, L. *Cotula minuta*, Forst. *Centipeda minuta*, Mats. & Koidz.). Chk., in rice paddy; a minute composite.

Chrysanthemum

C. carinatum, Schousb. Sh., cult.

†C. coronarium, L., var. spatiosum, var. nov. Planta robusta foliosa; folia non dissecta nec profunde divisa, maxime simpliciter pinnatifida, laminae parte superiore tantum lobata.—Fig. 17. Sh.(4), cult., and sold in market; grown at Ithaca from garden seeds from central and southern China. This plant is grown by the Chinese as Boong-hau-ts'ai, the young herbage being eaten. At first I took the plant to be a form of *Chrysanthemum segetum*, but after studying that species in the field in Europe and in much herbarium material I am convinced that I cannot refer it there. I judge my plant is the same as specimens described as follows in Forbes and Hemsley, Enum. Pl. China (Journ. Linn. Soc. Bot. xxiii: 438) under C. *segetum:* "Chungking specimens collected by Mr. F. S. A. Bourne have more divided leaves than ordinary *C. segetum*, but not the comparatively finely divided leaves of *C. coronarium*. Mr. Bourne gives the Chinese name as T'ung-hao-ts'ai." Bretschneider speaks in "History of European Botanical Discoveries in China" (p. 537) of "Chinese salad, a kind of chrysanthemum.—Probably *Ch. coronarium*, which at Peking is much cultivated as a salad." Franchet records in Plantae Davidianae (Vol. 1, 166) that *Chrysanthemum coronarium* is cultivated by the Chinese for use in cooking. The strict stiff habit, as well as the foliage and lighter-colored and different blossoms, distinguish my plant from *C. segetum*, and ally it with *C. coronarium*. Moreover, *C coronarium* is cultivated in Japan for "greens," and I have grown it from Japanese garden seeds, but I have not had it from China.

C. frutescens, L. Sh., cult.

C. indicum, L. Klg.(3). Chk. Nanhsuchou, Prov. Anhwei (J. L. Buck). Also grown extensively at Ithaca from seed from Chi-kung-shan (standing two winters in the open). This is the wild chrysanthemum of the central country. I have seen it only with yellow fls. It is supposed to be one of the parents of the garden chrysanthemum (*C. hortorum*, Bailey), but it is my conviction that we should not speculate further on this subject

FIG. 17. CHRYSANTHEMUM.—UPPER, C. CORONARIUM. LOWER, C. CORONARIUM VAR. SPATIOSUM.

until the wild forms in China are well collected, over a wide range, and are assembled for study.

C. Leucanthemum, L. Klg., apparently an escape. Chk.(2), once adventive in a lawn, and once in a missionary's garden with the statement that the seed came from America as "Shasta daisy."

C. maximum, L. Sh., cult. The Shasta daisy, probably belonging with this species, was also taken in a garden at Kuling.

C. segetum, L. Klg., cult. in a flower-garden.

Cichorium

C. Endivia, L., var. sativa, DC. Sh., in the market, as Kah-ts'ai.

Cirsium

C. japonicum, DC. Sh.(2). Chk.

C. segetum, Bunge. Sh. Chk.

Coreopsis

C. Drummondii, Torr. & Gray. Sh., cult.

C. lanceolata, L. Klg., naturalized. Chk., escaped.

C. tinctoria, Nutt. Chk. Escaped.

Crepis
C. japonica, Benth. Sh.(8), an abundant and widely variable weed. Chk.
Eclipta
E. alba, Hassk. Wuchang; weed.
Erigeron
E. annuus, Pers. Sh.(3), common weed. Klg.
E. bonariensis, L. Sh.(2). Ksh.
E. canadensis, L. Chk.(3). Ksh.
Eupatorium (determined by B. L. Robinson, Gray Herbarium).
E. japonicum, Thunb. Klg.(2), one collection with alternate lvs.
Gnaphalium
G. japonicum, Thunb. Sh.(2), lawn weed.
G. luteo-album, L. Sh.(2).
G. multiceps, Wall. Sh. Chk.
Helianthus
H. debilis, Nutt., var. cucumerifolius, Gray. Sh., cult. Hankow, freely spontaneous in a neglected enclosed yard.
H. tuberosus, L. Sh., tubers sold in market as Ngah-koh-yui-na; grown by me at Shanghai.
Lactuca
L. chinensis, Makino (*L. versicolor*, Schultz Bip.) Sh.(2). Chk.(3). Sometimes yellow-flowered and sometimes bluish. The material is variable, and the group needs further study.
L. debilis, Maxim. Sh.(2).
L. denticulata, Maxim. Chk.(2). Ksh.
L. elata, Hemsl. Klg.
L. formosana, Maxim. Sin-tien, near Chk., at foot of mountain.
L. sativa, L. Sh., cult. by Chinese; also grown at Ithaca from Chinese seeds.
†L. sativa var. angustana, n. st. (*L. angustana*, Hort., apud Vilm.). Folia radicalia et inferiora anguste vel oblongo-lanceolata, irregulariter sinuato-dentata, plana, 2–3 dm. longa et 4–6 vel 7 cm. lata, nonnunquam caput formantia; folia superiora gradatim in bracteas mutata, auriculato-amplexicaulia, lanceolato-attenuata.—Sh., cult. by the Chinese; also grown at Ithaca from Chinese seed. This is the "asparagus lettuce" of horticulturists, scarcely known in America. It quickly runs to seed. This plant is not to be confused with the cos or romaine group of lettuces, which is characterized by leaves long rather than narrow,—longer than those of the common low compact lettuces.*
Lapsana
L. apogonoides, Maxim. Sh.(2).
Leontopodium
L. Sieboldianum, Sieb. & Zucc., sens. lat. Ksh.(2). My collection lacks the open-branched inflorescence of the herbarium material of this species; I at first named it as new, but I am unable to draw good distinctions. The herbarium collections need further study.
Picris
P. hieracioides, L. Chk. Ksh.
Saussurea
S. affinis, Spreng. Sh.(3). Ch.(2). Common weed. The complicated synonymy of this species I have not attempted to analyze; probably a range of forms is involved.
Scorzonera
S. macrosperma, Turcz. Chk.
Senecio
S. Jacobaea, L. Ksh.
Serratula
S. deltoides, Robinson (*S. atriplicifolia*, Benth. & Hook.). Klg.
S. radiata, Bieb. Ksh.
Sonchus
S. asper, Hill. Sh.
S. oleraceus, L. Sh.(2). Chk.
Taraxacum
T. officinale, Weber. Sh.(3).
Xanthium (determined by C. F. Millspaugh, Field Museum of Nat. Hist., Chicago).
X. strumarium., L. Sh. Wuchang. Weed.

*L. *sativa* var. *longifolia*, Lam. Dict. iii. 403. 1789 (*L. romana*, Garsault, Traité des Plants et Animaux d'Usage en Medicine, iii. 196, t. 315. 1767). The cos and romaine lettuces, with oblong or obovate upstanding firm rounded or obtuse leaves, the midrib often much developed. Probably of southern origin, as indicated by the name Cos, early name of one of the Ægean islands, and by Romaine or Roman.